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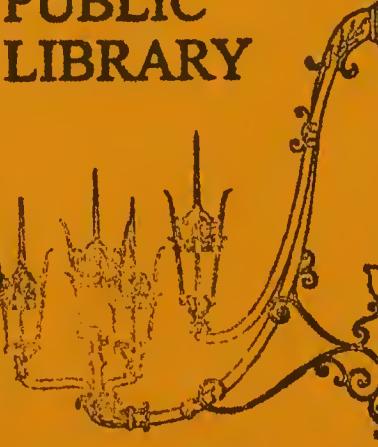
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A GUIDE TO FRESHWATER WETLAND PLANTS

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A Guide to Freshwater Wetland Plants in Boston
by
Tim Strunk

This report was prepared for the Boston Conservation Commission in August 1975, -
with the assistance of Commission staff members Martin Laird and Alan Weinberg.

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A Guide to Freshwater Wetland Plants in Boston

This guide has been compiled to provide a useful and informative listing which will enable the layman to distinguish and become familiar with the wide variety of freshwater wetland plants in the Boston area. The plants included here are found in the Wetlands Protection Act of Massachusetts of 1974. (Chapter 131, section 40 of the General Laws)

The Act lists four types of freshwater wetlands; wet meadows, marshes swamps, and bogs, the bog being the only one not found in the city of Boston. A freshwater wetland as considered in the act is an area where groundwater, flowing or standing surface water or ice, provides a significant part of the plant community support for at least five months of the year.

Marshes are areas generally covered with shallow running or standing water during the growing season. Vegetation is typically rooted on the bottom consisting of different submergent and emergent plants. Marshes are formed by the gradual filling of ponds with organic debris and in low areas where shallow water is found year round. The processes of growth eventually create a wet meadow. The wet meadow is considered to be an area where groundwater is at the surface for a good part of the growing season and near the surface otherwise. Grasses, sedges and rushes comprise most of the vegetation. Swamps occur where the groundwater is at or near the surface most of the year or where runoff water frequently collects above the soil. Swamps are often wooded though they may be characterized by shrub growth only. The plants are shown in one category only. The conditions necessary for different plants may be met in other wetland types. On occasion wetlands can be in transition from one category to another or to a non-aquatic community.

In this guide, each plant species is characterized as to the habitat for conditions necessary for growth which may apply with the following categories:

1. Phreatophytic: these are plants whose root systems extend into the water table or in the soil layer just above the water table. This is a requirement for normal growth.
2. Tolerant: these are trees and shrubs which will tolerate moist conditions, but saturated soils are not a requirement for proper growth.
3. Hydrophilic: these are plants of the shore habitat which include border grasses, emergents, floating-leaf plants, and submersed plants, all of which require permanent standing of slow-flowing water.
4. Superfluous: as with some of the tolerant plants these have closely related plants which enjoy dry conditions. They are not good indicator plants of wetlands and are often more difficult to identify.

A very faint, large watermark-like image of a classical building with four columns and a triangular pediment occupies the background of the page.

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The plants are also characterized as being trees, woody shrubs or herbaceous-soft leafy green plants, (which are plants dying back to the ground at the end of the growing season).

The plants are arranged by wetland types as listed in Chapter 131, Section 40 of the States General Laws. Each species has the following information: common name, generic name, a brief description, characteristics, technical description and sketches.

Glossary

alternate	not opposite; only one leaf at a node, only one bud at a node
bristly	with stiff hairs
bud	an undeveloped stem with undeveloped leaves, or flowers or both
capsule	a dry dispersing fruit developed from a compound ovary
catkin	a spike of unisexual flowers, each borne in the axil of a small leaf or scale
ciliate	fringed with hairs
compound	a leaf whose blade is divided into separate parts called leaflets
coniferous	cone-bearing trees of the Pine family
deciduous	falling off; applied to leaves which drop off in the autumn of their first year
doubly serrate	doubly toothed
drupe	a stone fruit, the fleshy part surrounding a stone which encloses the seed, as in the peach: typically with one stone but sometimes with more than one
entire	with an even margin, not toothed, or divided
fruit	a ripened ovary or seed vessel
glabrate	formerly pubescent, now glabrous
glaucous	covered with white or bluish bloom which rubs off, as on a plum
globular	spherical
imbricated	overlapping
involucral leaf	a group of leaves around a flower or flower cluster; and so, around the fruit
lanceolate	shaped like the head of a lance; much longer than wide, tapering to a point at the upper end, and slightly narrowed at the base
leaf axils	angles; the angles between a leaf and stem
leaf scar	a scar left where a leaf fell from the stem

lobe	a segment of a leaf whose margin is too deeply cut to be called toothed
mucilaginous	sticky or gummy
oblong	longer than wide, with margins nearly parallel
ovovate	ovate with the narrow end toward the base
opposite	leaves or auxillary buds two at a node, inserted on oppostie sides of the stem at the same level
ovate	with the general outline of a length-wise section of an egg, with the wider end toward the base
ovoid	egg-shaped with the broadest portion near the base
petal	one of the modified leaves (usually bright-colored) forming the inner circle of leaf-like parts of a flower, next to and surrounding the stamens
petiole	the stalk of a leaf
pinnate	resembling a feather; pinnately veined, lobes or compound with veins, lobes, or leaflets arranged along the sides of a central axis or rachis. Twice pinnate, where the leaflets themselves are also pinnately compound. Odd-pinnate with terminal leaflet. Abruptly pinnate. Ending with a pair of leaflets, no terminal leaflet
pistillate	having one or more pistils, but no stamens
pith	the softer, central part of the stem
pubescent	bearing hairs of some sort, soft and fine ones particularly
scales	a very small leaf, usually appressed and often dry; e.g. modified leaves that cover buds; modified leaves of cones and catkins.
serrate	saw-toothed; with sharp teeth pointing forward
serrulate	finely toothed
sessile	without a stalk
stamen	one of the pollen-bearing organs of a flower
staminate	having stamens but no pistils
stipules	small appendages occurring in pairs at the bases of the petioles of the leaves of certain plants

stipule scars	a scar left on the stem where a stipule had been
valvate	with edges meeting and not overlapping
vascular bundle scar	small marks on a leaf scar where the vascular bundles passed from the stem and connected with the veins in the leaf
whorled	a circle of three or more (leaves or buds) around the stem

BIBLIOGRAPHY

Core, Earl L. and Ammons, Nellie P., Woody Plants in Winter, Boxwood Press, Pittsburgh, 1958.

Graves, Arthur Harmont, Illustrated Guide To Trees And Shrubs, Harper and Row, New York, 1956.

Hotchkiss, Neil, Common Marsh Underwater And Floating-Leaved Plants, General Publishing Company, Ltd. Toronto, 1972.

Neiring, W. A., "Inland Wetland Plants of Connecticut", Bulletin No. 19 The Connecticut Arboretum, New London, May 1973.

Peterson, Roger Tory and McKenny, Margaret, A Field Guide To Wildflowers, Houghton Mifflin Company, Boston, 1968.

Reid, George K., Pond Life, ed. by Herber S. Zim and George S. Fichter, Golden Press, New York, 1967.

Weaver, R. E., "City Trees in The Boston Area," Reprinted from Arnoldia, Vol. 34, No. 4, (July/August 1974)

WET MEADOWS

Blue Flag (Iris)

Vervain (Verbena)

Thoroughwort (Eupatorium)

Dock (Rumex)

False Loose Strife (Ludwigia)

Hydrophilic Grasses (Graminaceae)

Loose Strife (Lythrum)

Marsh Fern (*Dryopteris thelypteris*)

Rushes (Juncaceae) (See Marshes)

Sedges (Cyperaceae)

Sensitive Fern (*Onoclea sensibilis*)

Smartweed (Polygonum)

BLUE FLAG

Iris

The Iris is very similar to the Iris found in home flower beds, though usually smaller. The leaves are flat and firm and are arranged in a fan-like shape. The flowers are showy, bluish-violet in color.

- Found in swamps, marshes, wet meadows and moist areas
- Phreatophytic plant.
- A Herbaceous plant.

A graceful, sword-leaved plant similar to the garden iris. Showy, down curved violet sepals are boldly veined. 2 to 3 feet tall.

Also Slender Blue Flag, the leaves being more grasslike. 1 to 3 feet tall.



VERVAIN

Verbena

The branching spikes of flowers ranging from white to reddish to blue and violet, blooming from July through September, are the most recognizable characteristic. The leaves are paired and toothed. Vervain is found along roadsides and in thickets as well as wet areas.

- Found in wet meadows, moist soil as well as dryer conditions
- Superfluous plant
- A Herbaceous plant

Blue vervain has branching spikes of small 5 petaled flowers that bloom a few at a time, advancing toward the pointed tip. The stem is grooved and 4-sided. European vervain, with flimsy spikes of lilac flowers; paired deeply lobed lower leaves; 1-2 feet.



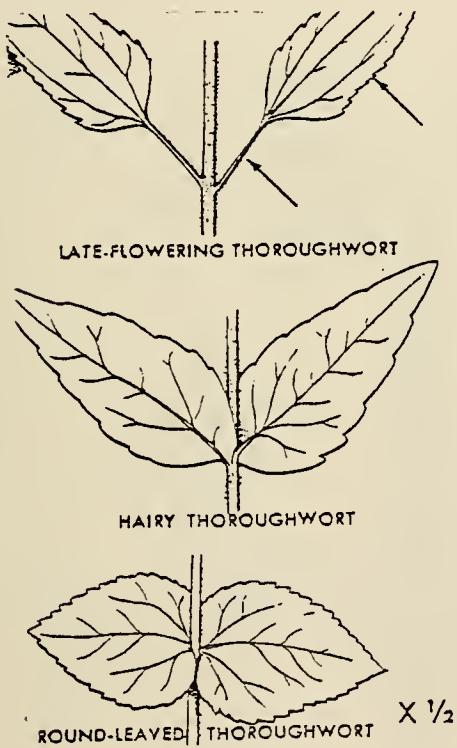
THOROUGHWORT

Eupatorium

Thoroughworts are usually best recognized by the small white flowers in late summer and fall. The fuzzy heads are clustered in rounded or flat-topped groups at the end of the stems. The leaves are the best way of determining the species, of which there are 26 in this area.

- Found in wet meadows, moist soil as well as dry
- Phreatophytic plants, (the species Joy-Pye Weed and boneset)
- A Herbaceous plant

The leaves are usually paired, sometimes in whorls. The species are confusing and often show varietal forms and hybrids. The flowers are usually white.



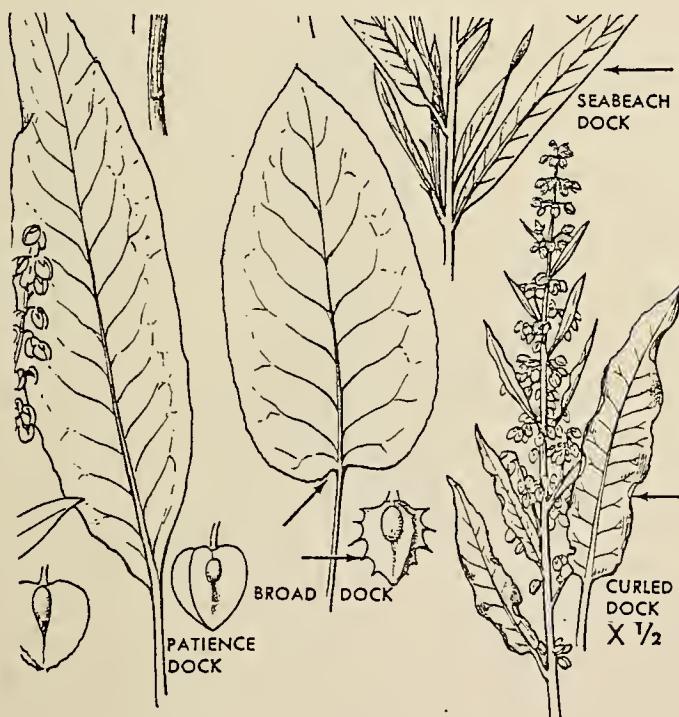
DOCK

Rumex

Seabeach dock and water dock are the two species which are found in wet areas. The seabeach dock has narrow whitish leaves and seeds nearly as long as the seed wings. Water dock has long leathery leaves and flowers in slender clusters.

- Found in swamps, wet meadows and marshes
- Superfluous plant
- A large Herbaceous plant

Water dock has its flowers in slender clusters, a large plant (3-7 feet) with long-stalked leathery leaves up to 2 feet long. Large Heart shaped fruit. Of 20 species of dock, most have coarse leaves and dense heads of small greenish flowers or winged brown seeds.



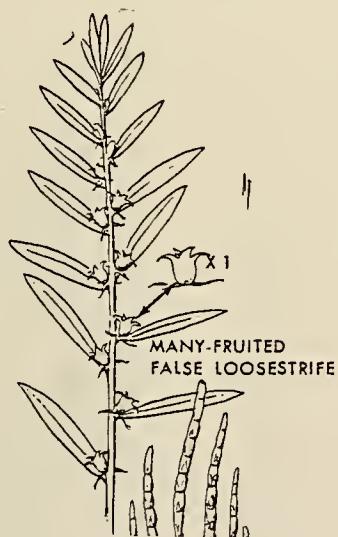
FALSE LOOSESTRIFE

Ludwigia palustris

The long narrow leaves of this herbaceous plant along with the stalkless green flowers at the base of the leaves are the main characteristics.

- found in wet meadows and moist soil
- tolerant plant
- a herbaceous plant

The flowers are green and sessile with petals rudimentary. Leaves lanceolate; seed capsules and stems 4-sided. Between 6 and 30 inches tall. Usually sprawls on wetground or partly under water; but sometimes in clear springs and spring-fed streams it has the same appearance when it grows out of water.



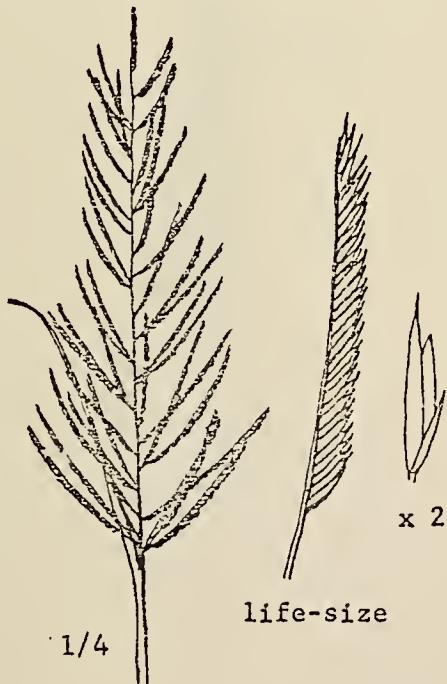
HYDROPHYLIC GRASSES

Gramineae

Plants with upright or upslanted stems with grasslike leaves on two sides (one plane); flowers individually inconspicuous between scales which overlap in two rows to form spikelets, the spikelets clustered toward the top of stems.

- Primarily found in marshes, swamps and wet meadows
- Herbaceous
- Hydrophilic Plant

Usually growing inland in fresh and moderately alkali marshes and along the coasts in fresh to salt marshes. Most kinds come up year after year from rootstocks, but a few grow each year from seed. They vary from ankle-high in Low Mannagrass and Coast Dropseed to three times as high as a man in Phragmites. Flowers are in green, yellow, brown, or purple spikelets which sometimes are in showy clusters.



LOOSESTRIFE

Lythrum salicaria

Purple loosestrife is recognized by the tapering spikes of magenta or scarlet flowers.

- Primarily found in swamps and wet meadows
- Tolerant plant
- Herbaceous plant

Loosestrife is located from Quebec to Virginia with a local variety in New England with smooth leaves that are more slender and narrower. Loosestrife is recognized by the tapering spikes of magenta flowers. The leaves are attached directly at the stem, without a stalk and downy to the touch. Stems waist-high to as high as-mass - fine, hairy leaves in pairs or sometimes in threes to 4 inches long. Flowers purplish-pink.



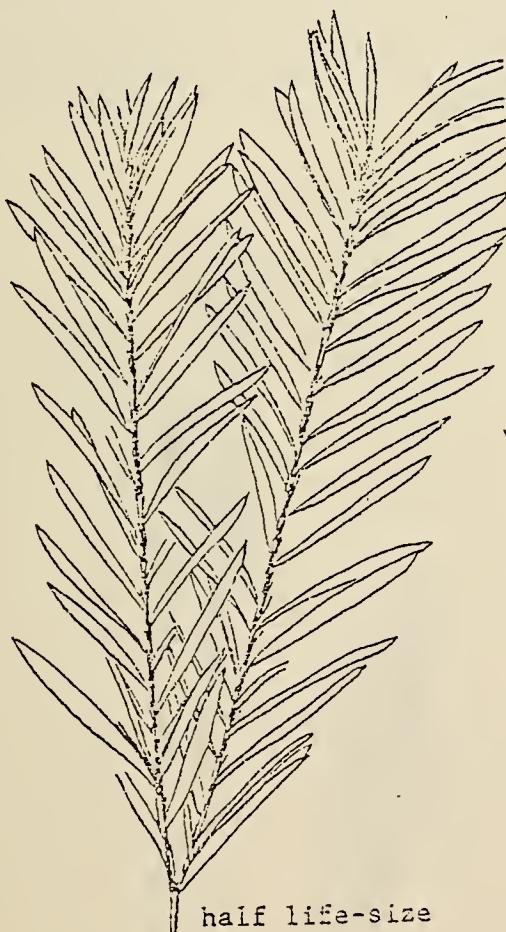
MARSH FERN

Dryopteris thelpertis

Marsh Fern has thin delicate leaves and grows about 2.5 feet tall.

- Primarily found in wet meadows
- Herbaceous plant
- Phreatophytic plant

The marsh fern is found along wet edges of ponds and swamps. It has delicate sharply pointed leaves that are sensitive to frost. It grows to 2.5 feet tall with its leaves opposite at the base and becoming alternate.



half life-size

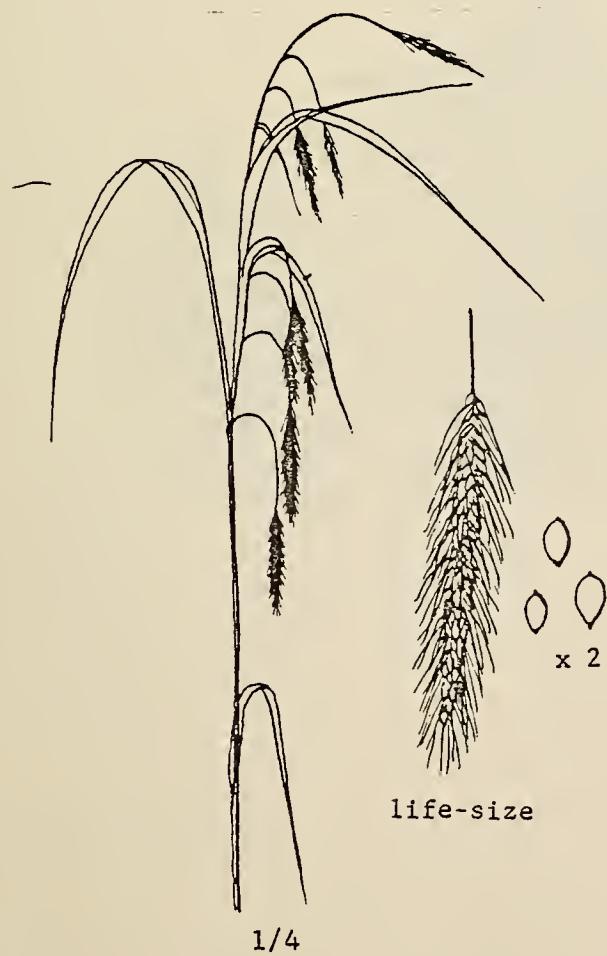
SEDGES

Cyperaceae

Sedge contain leafy stems, single or in clumps, vary from 1-3 feet in height.

- Primarily found in marshes, swamps and wet meadows
- Herbaceous
- Phreatophytic plant

Inland, several kinds of Sedge grow in fresh marshes; along the coasts, several grow in fresh, brackish, and salt marshes. Their leafy stems, single or in clumps, vary from less than ankle-high to shoulder-high. Toward the top they bear upright to dangling spikelets of closely packed, individually inconspicuous flowers which are partly hidden by green, yellow, brown, purplish, or blackish scales. Some kinds have male and female flowers in different parts of each spikelet; others have male flowers in spikelets at the top of stems, female flowers in different-looking spikelets farther down. Male flowers soon wither. Each female flower is in a sac which grows bigger and finally contains one ripe seed.



Sensitive Fern

Onoclea sensibilis

Familiar plant in wet areas and low woods. Particularly sensitive to frost.

- Found in most areas of wet meadows
- Phreatophytic plant
- Herbaceous plant

Leaves grow to nearly a foot long. They are pale green and not finely divided.
The whole structure resembles an upright cluster of small grapes.



SMARTWEED

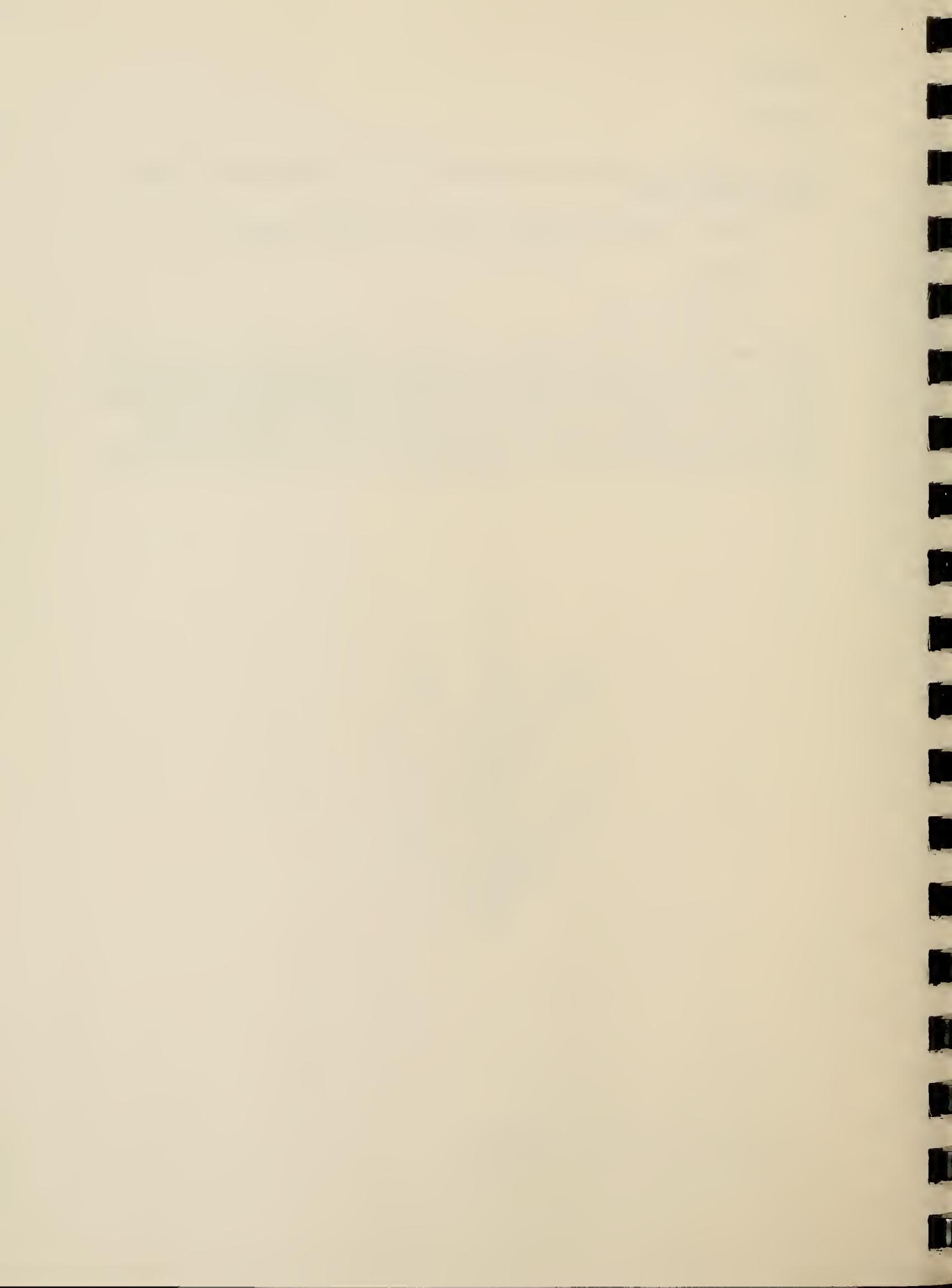
Polygonum

Water Smartweed has glossy leaves and spike of greenish-white flowers along slender stems.

- Primarily found in marshes, ponds and sluggish streams
- Herbaceous
- Superfluous plant

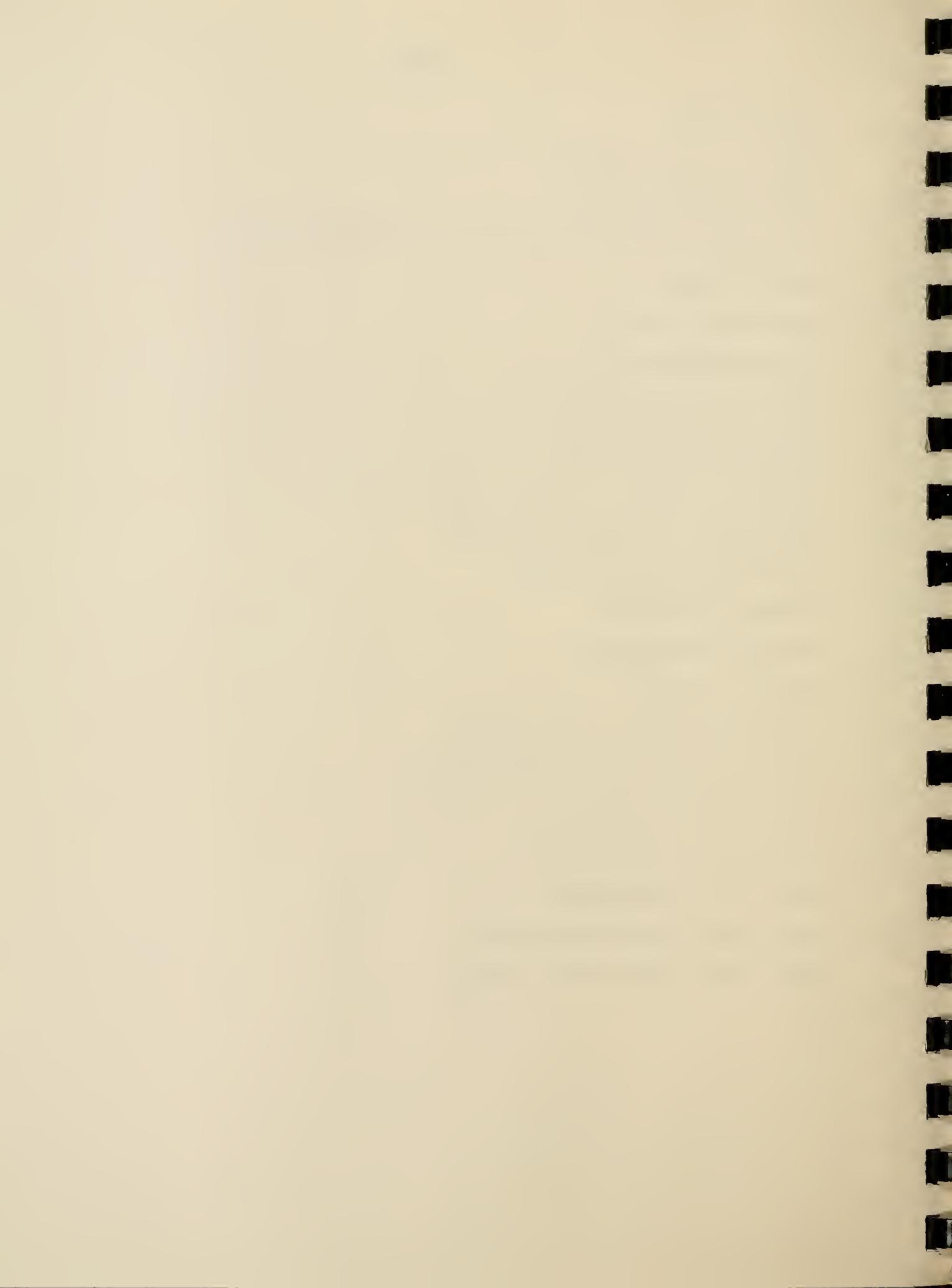
Smartweeds grow in fresh marshes and shallow water, inland and along the coasts. Most kinds have upright, branched stems with lance-shaped to oval leaves. At the end of stems are spikes of pink, white, or greenish flowers. The flowers are long-lasting and eventually evolves single brown or black seeds which are often eaten by ducks. Some kinds not described here often grow on flat land which may be covered with shallow water in winter, after the plants have died.





MARSHES

Arums (Araceae)
Bladderworts (Utricularia)
Bur Reeds (Sparganiaceae)
Button Bush (*Cephalanthus occidentalis*) (See Swamp Plants)
Cattails (Typha)
Duck Weeds (Lemnaceae)
Eelgrass (Vallisneria)
Frog Bits (Hydrocharitaceae)
Horsetails (Equisetaceae)
Hydrophilic Grasses (Gramineae) (See Wet Meadows)
Leatherleaf (*Chamaedaphne calyculata*)
Pickerel Weeds (Pontederiaceae)
Pipeworts (Eriocaulon)
Pond Weeds (Potamogeton)
Rushes (Juncaceae)
Sedges (Cyperaceae) (See Wet Meadows)
Smartweeds (Polygonum) (See Wet Meadows)
Sweet Gale (*Myrica gale*)
Water Milfoil (Haloragaceae)
Water Lilies (Nymphaeaceae)
Water Starworts (Callitrichaceae)
Water Willow (*Decodon verticillatus*)



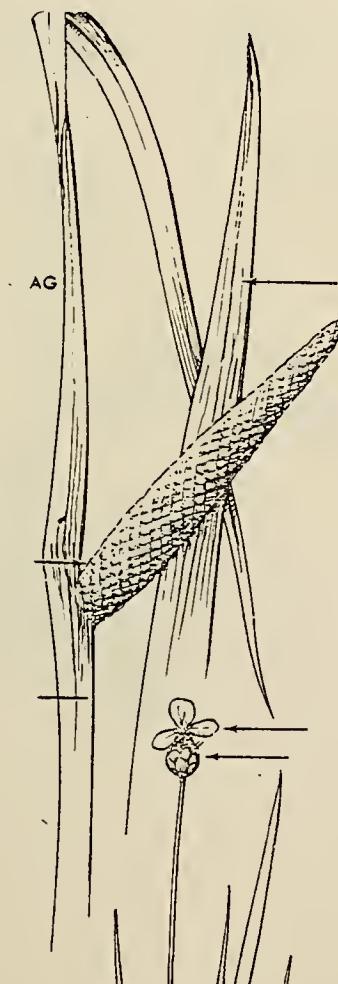
ARUMS

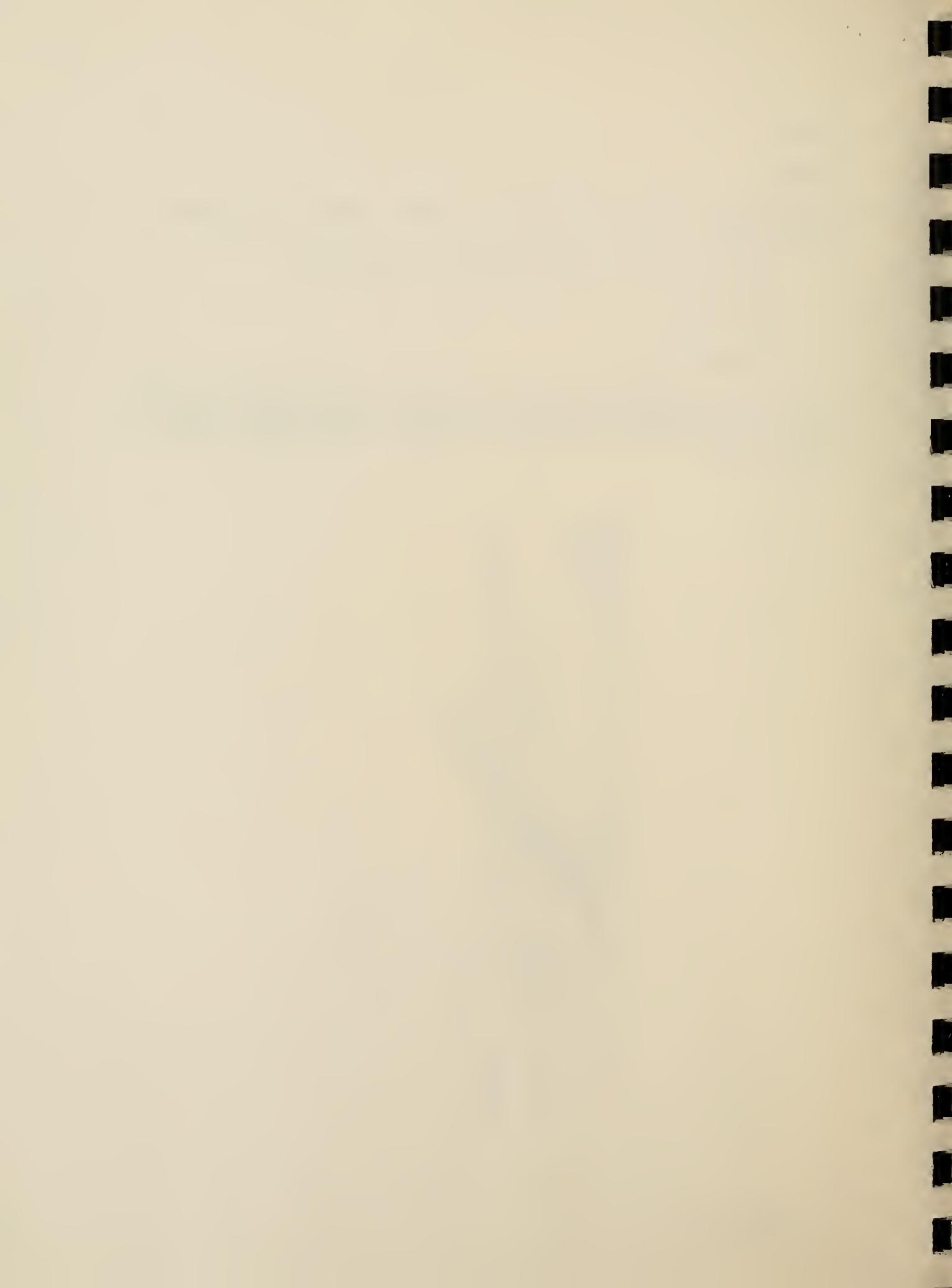
Araceae

Plant with the flowers clustered on a stalk. Leaves are large with thick stems.

- Primarily found in shallow water and on wet shores
- Herbaceous
- Phreatophytic

Usually a large floral leaf, called spathe, surrounds or partly enfolds a spikelike stem called the spadix on which are many minute florets. Leaves are usually large, smooth and glossy. Flower white, yellow, and green brown.





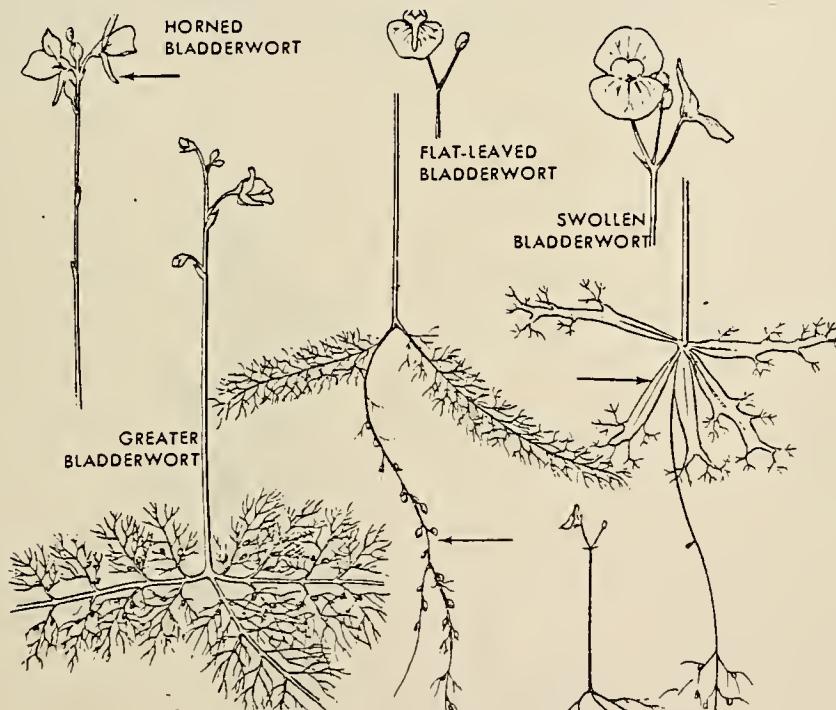
COMMON BLADDER WORTS

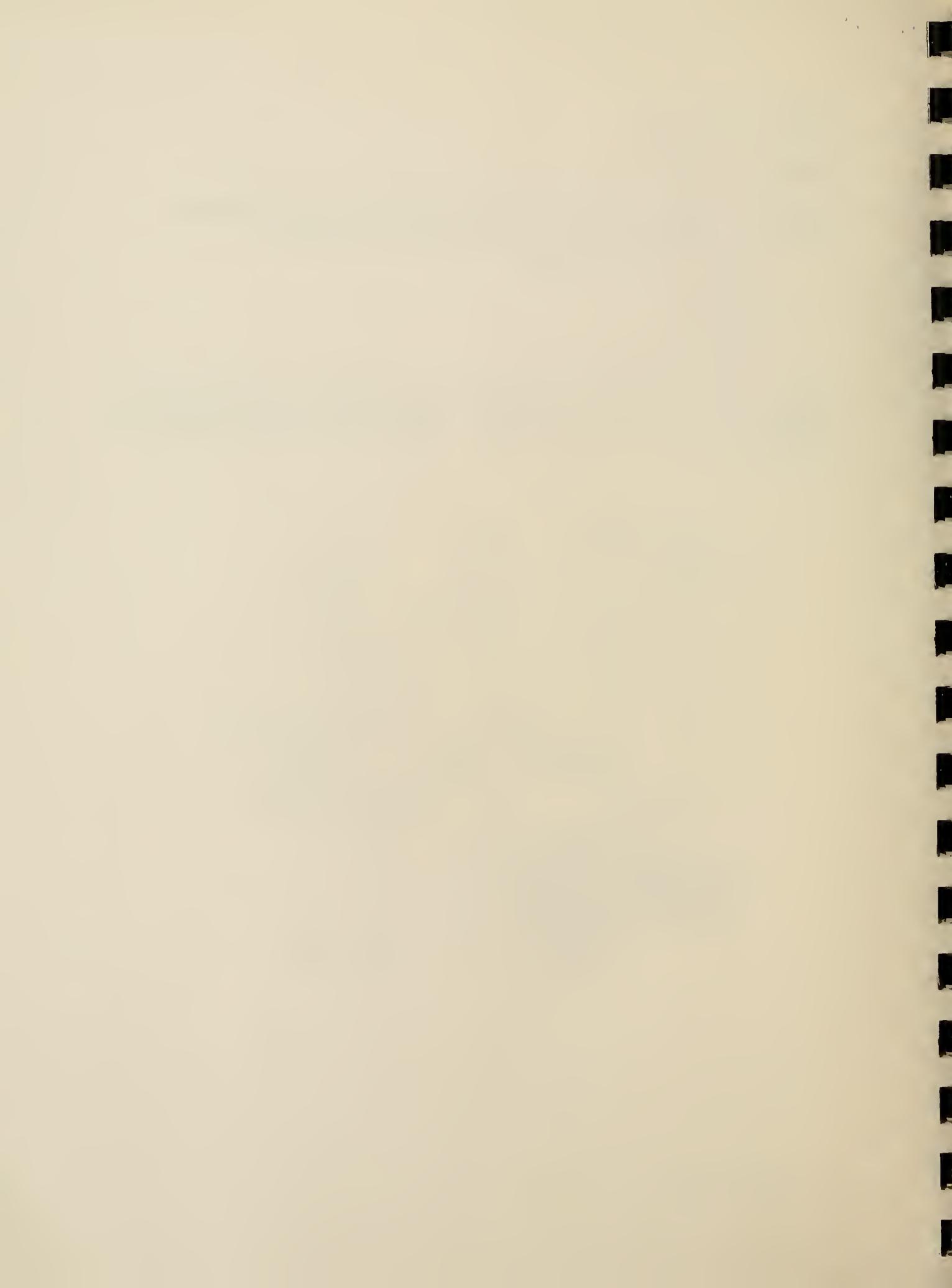
Utricularia vulgaris

Bladderworts have a snap dragon-like flower and on their submerged leaves tiny bladders in which small animals are trapped.

- Primarily found in marshes
- Herbaceous
- Hydrophilic

Small yellow flowers of two lips and a spur, (similar to snapdragons.) Flowering stalk, several inches tall, naked; filament-like leaves usually submerged in mud, with tiny bladders. About 1 dozen species in the northeast area.





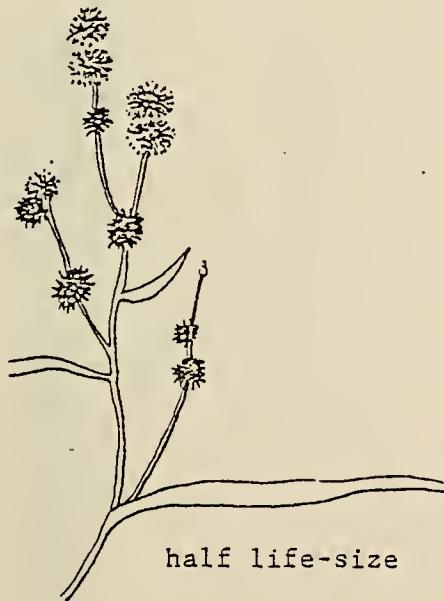
BUR-REEDS

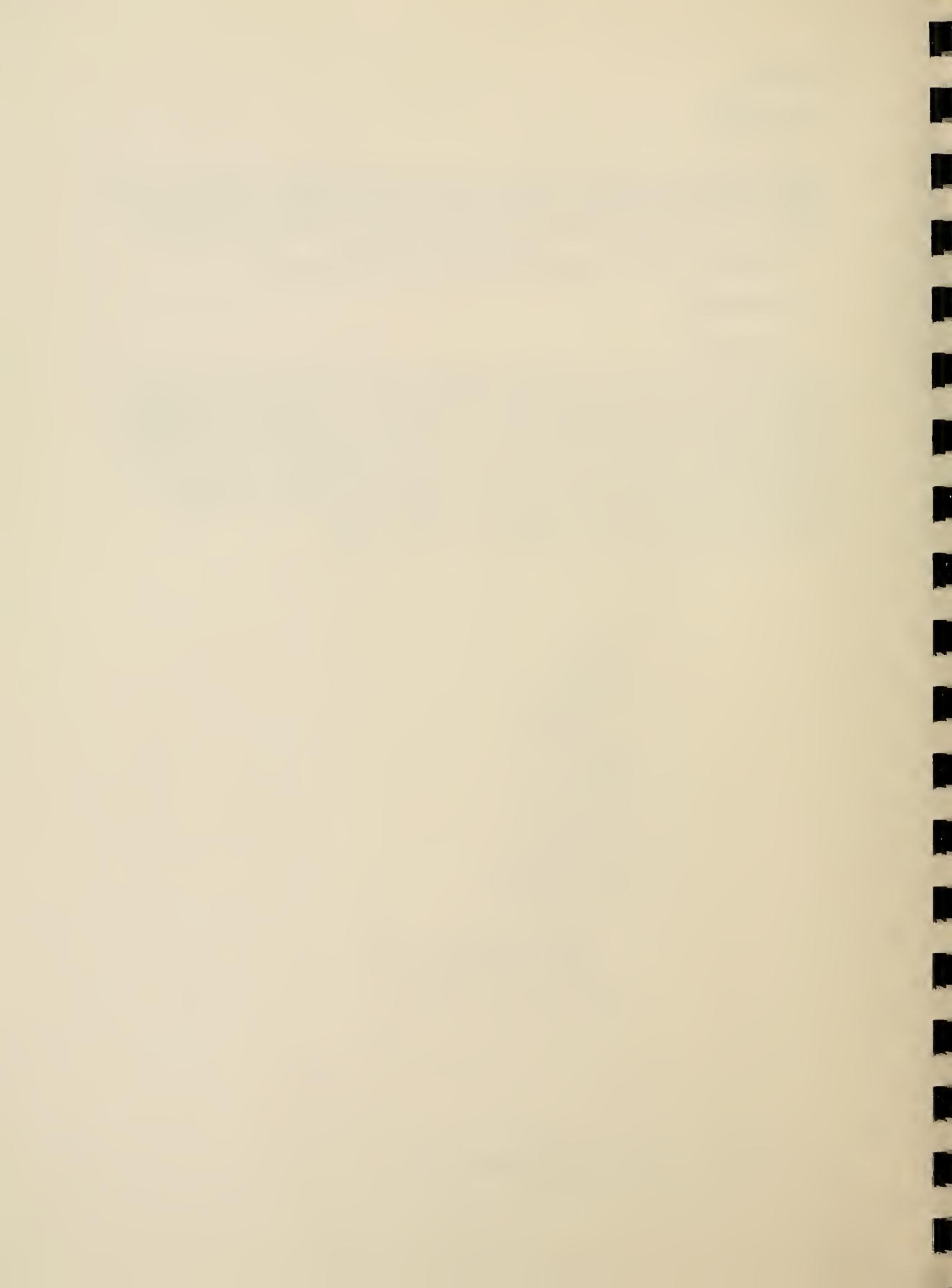
Sparganiaceae

Plants usually erect with flat leaves. Fruits arranged in one to five spherical bur-like heads. The bur-reeds are often found along with cat-tails, the two usually being the dominant plants along marshy edges.

- Primarily found in shallow water or on muddy shores
- Herbaceous
- Hydrophilic

Nine kinds of Burreed have early leaves which are limp and under water. When full-grown, the long ends of the leaves of one kind and sometimes those of several others float side by side or in tangles; the leaves of the remainder stand above water or mud. The underwater and floating leaves resemble the early leaves of Northern Mannagrass and Wildrice and the leaves of Wildcelery and a form of Water Arrowhead. When they mature, Burreeds can be told apart by differences in their prickly-looking seed balls and differences in their seeds.





CATTAILS

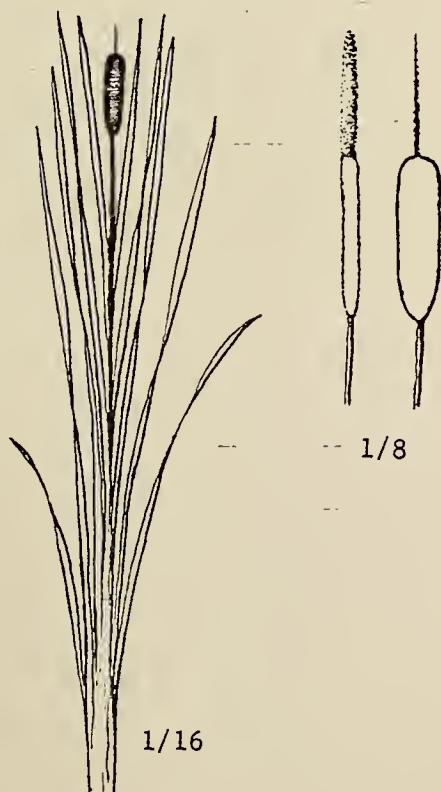
Typha

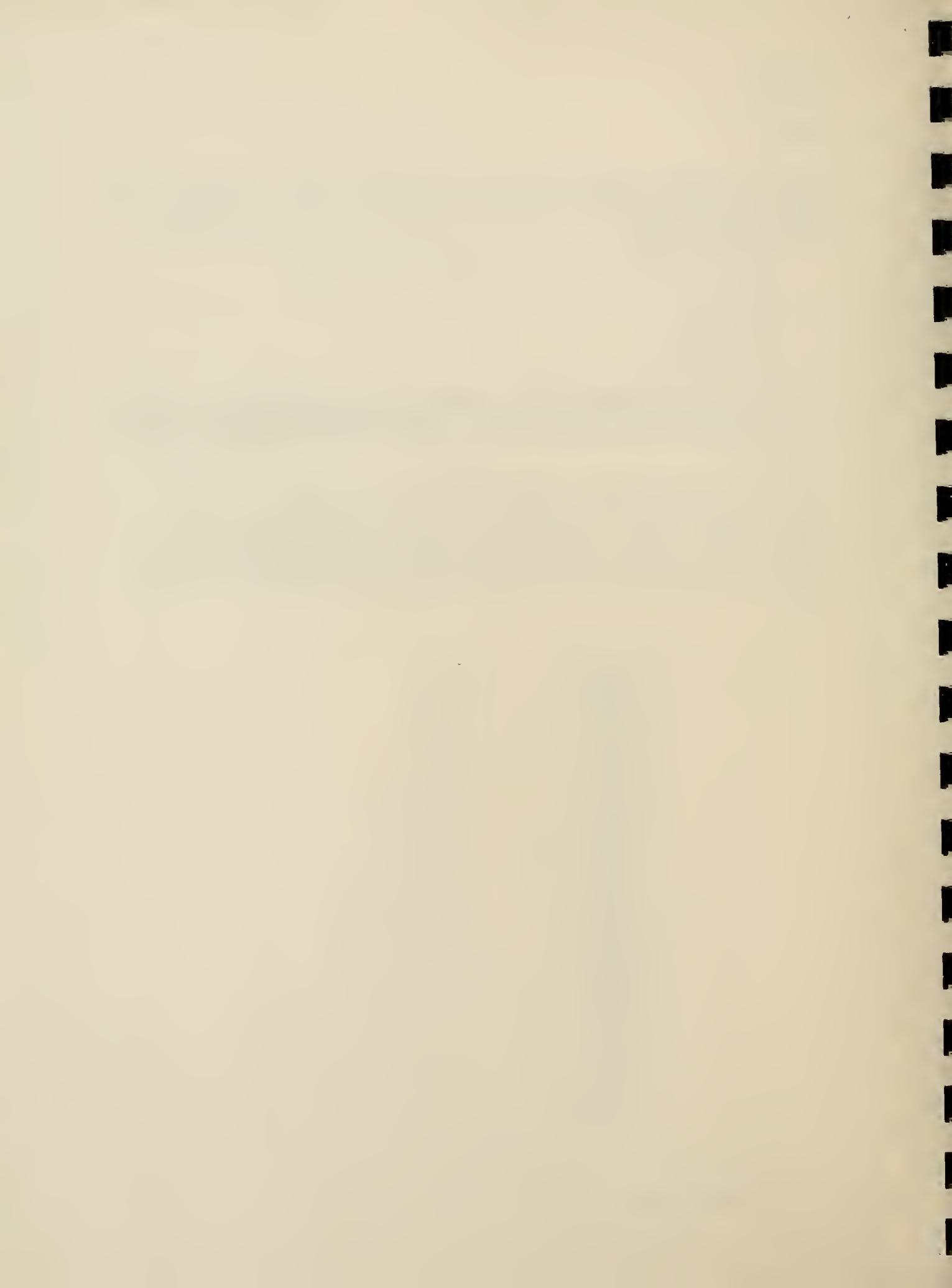
Cattails are among the more familiar of wetland plants. The brown, firm female flowers are commonly seen along pond edges, ditches and other standing water areas.

- Primarily found in marshes, swamps and wet meadows
- Herbaceous
- Phreatophytic

Tall plants growing dense stands. Leaves long, erect, bladelike, stem stiff with a cylindrical brown head of minute, tightly packed pistillate female flowers. Above this is a more slender tail of staminate, male flowers.

Early in a growing season, these spikes are in two parts: a soft yellowish mass of male flowers above and a firm green or brown mass of female flowers below. The male flowers soon fall and leave a bare, gray, slightly rough piece of stem; the female flowers develop into a thick long-lasting spike of innumerable closely packed hair-surrounded seeds.





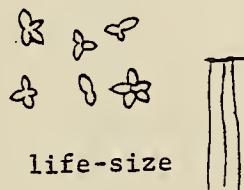
DUCK WEEDS

Lemnaceae

Duck weeds are small floating green plants found in still water. They lack leaves and stems and are similar to small flowers.

- Primarily found in marshes, swamps, and wet meadows
- Herbaceous
- Hydrophilic

Tiny floating herbs, are a favorite food of waterfowl. About 25 species of these smallest of the seed plants are known. Tiny flowers, rarely produced, grow out of the leaflike body lack true leaves and stems. Reproduciton is mainly vegetative, by division of plant body.





WILD CELERY (EELGRASS)

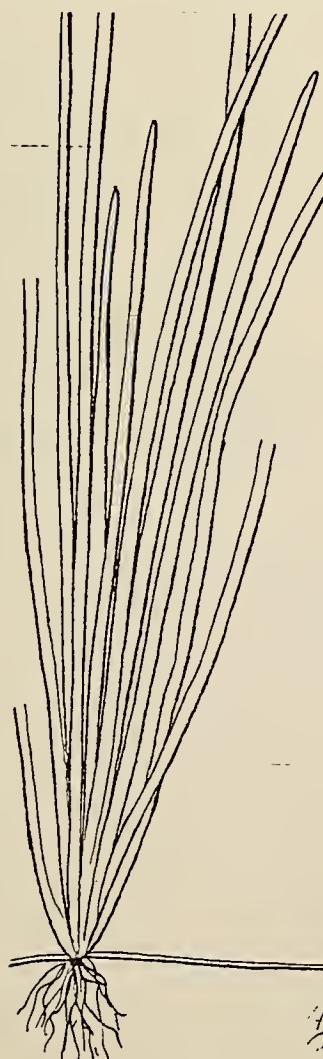
Vallisneria

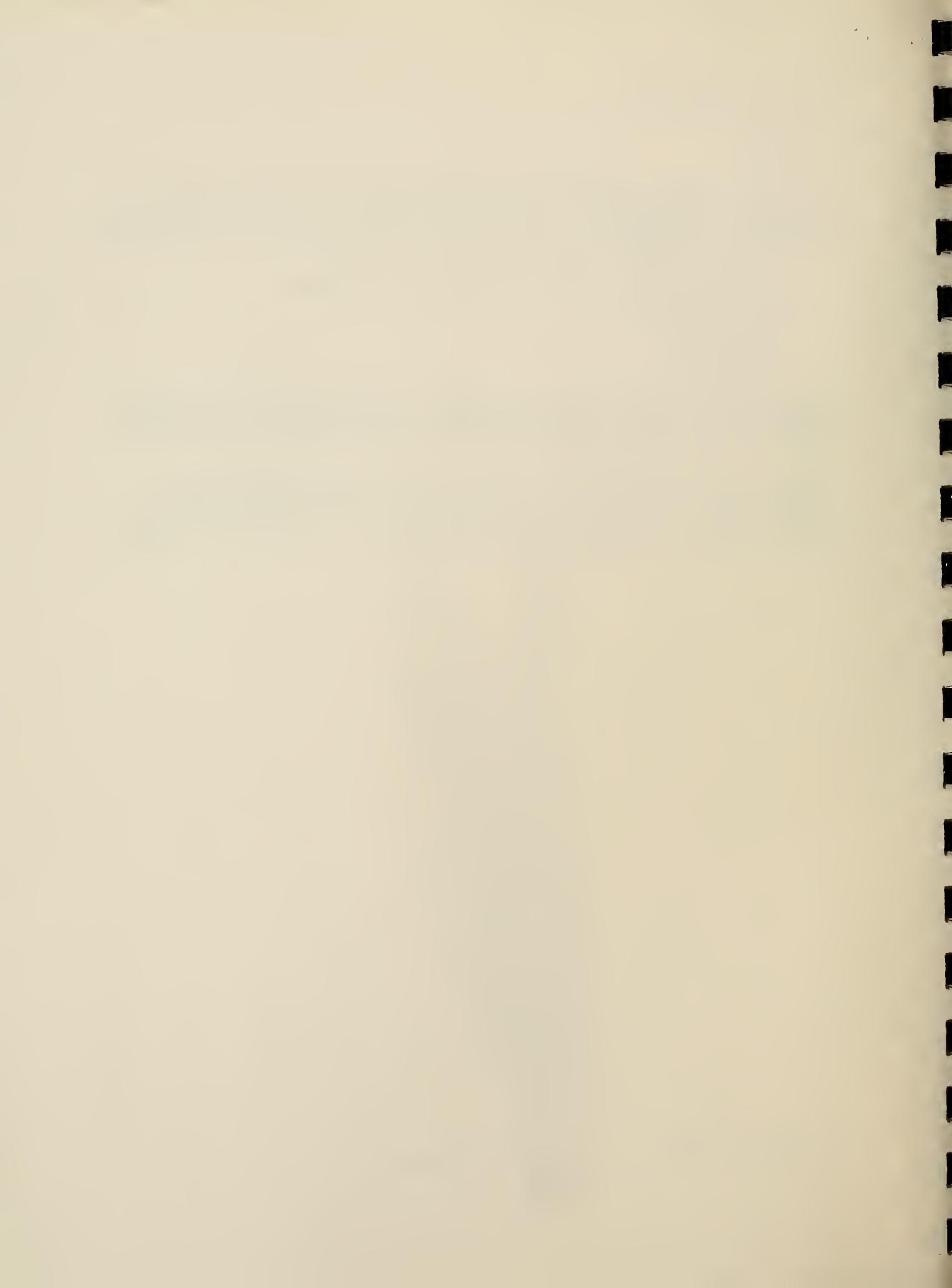
The leaves of this plant are wide at the base and then heart shaped and untoothed. Wild Celery is found in fresh inland water and fresh, slightly brackish coastal water.

- Primarily found in marshes, swamps and wet meadows
- Herbaceous plant
- Hydrophilic

Leaves emerge from rootstock in a cluster. Thick fleshy stems, favorite waterfowl food. After the floating flower is pollinated, a threadlike stem pulls it underwater, where the fruit ripens.

Leaves, which are sometimes several feet long, have a fine-veined, light-colored center stripe. In summer the plants have long-stalked, cylindric pods. The leaves resemble those of a form of Water Arrowhead, the underwater and floating leaves of Burreeds.





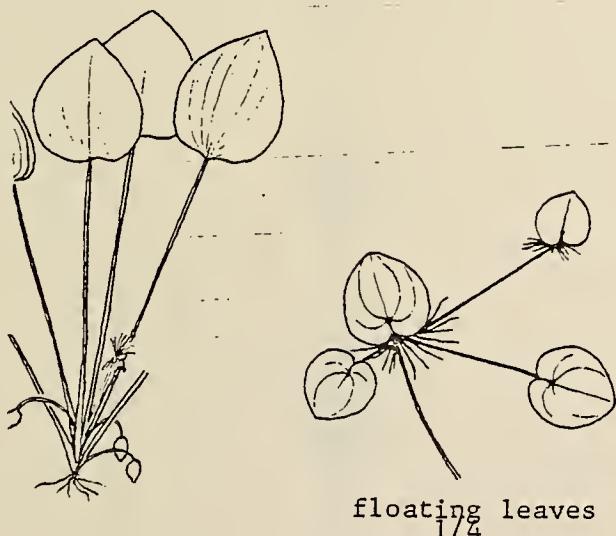
FROG BITS

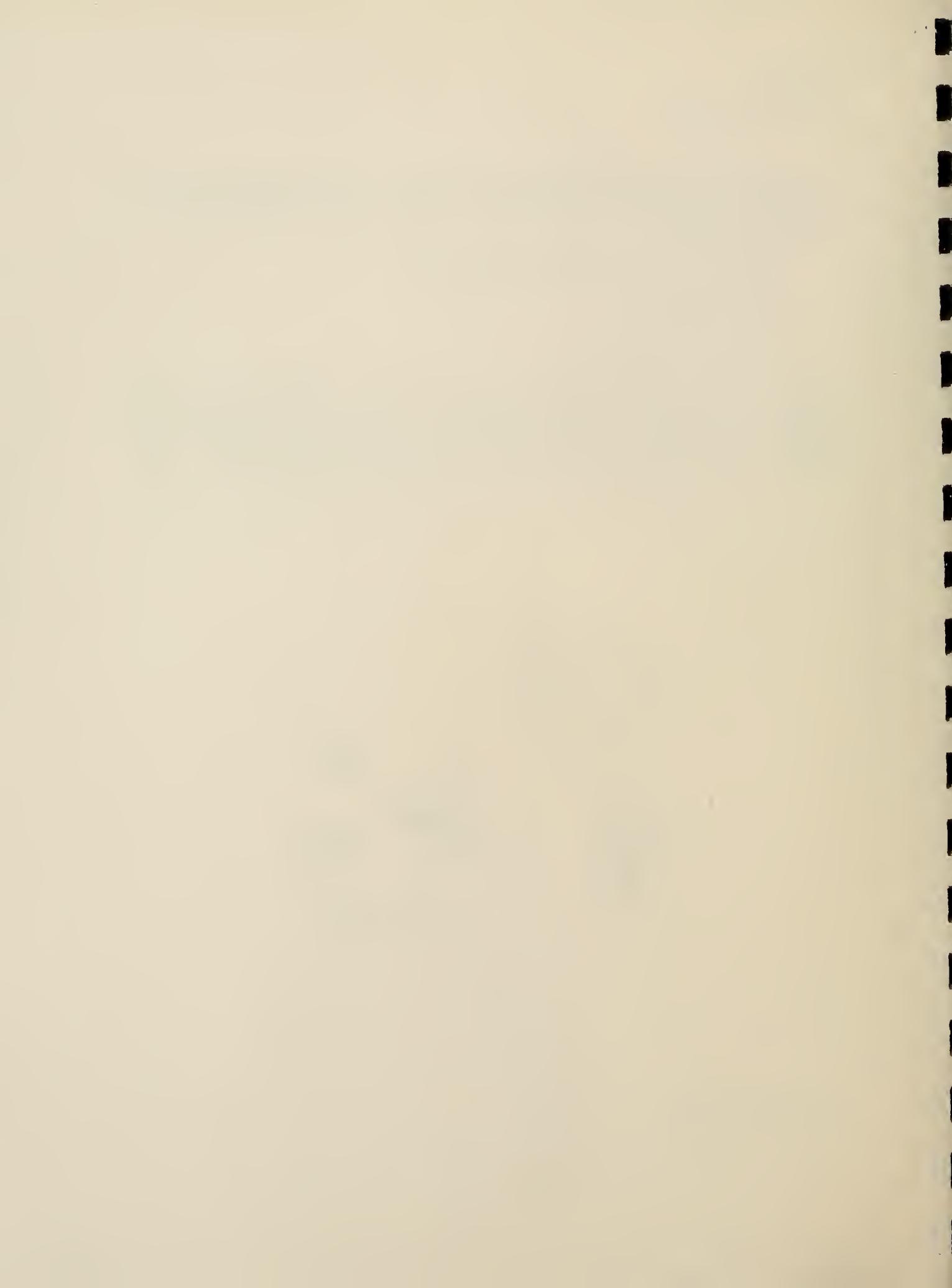
Limnobium spongia

Frog Bits are an aquatic plant found often in quiet mud bottomed water. May grow as a floating, rooted plant. Grows also in inland fresh marshes and water.

- Primarily found in marshes and swamps
- Herbaceous Plant
- Hydrophilic Plant

There are two forms of Frog Bits. One has rather leathery out-of-water leaves; the other has floating leaves which are thick and spongy in the center and are deeply notched at the base. Whitish, narrow-petaled female flowers grow on individual stalks at the base of a plant. They produce a roundish seed pod on a usually downcurved stalk.





WATER HORSETAIL

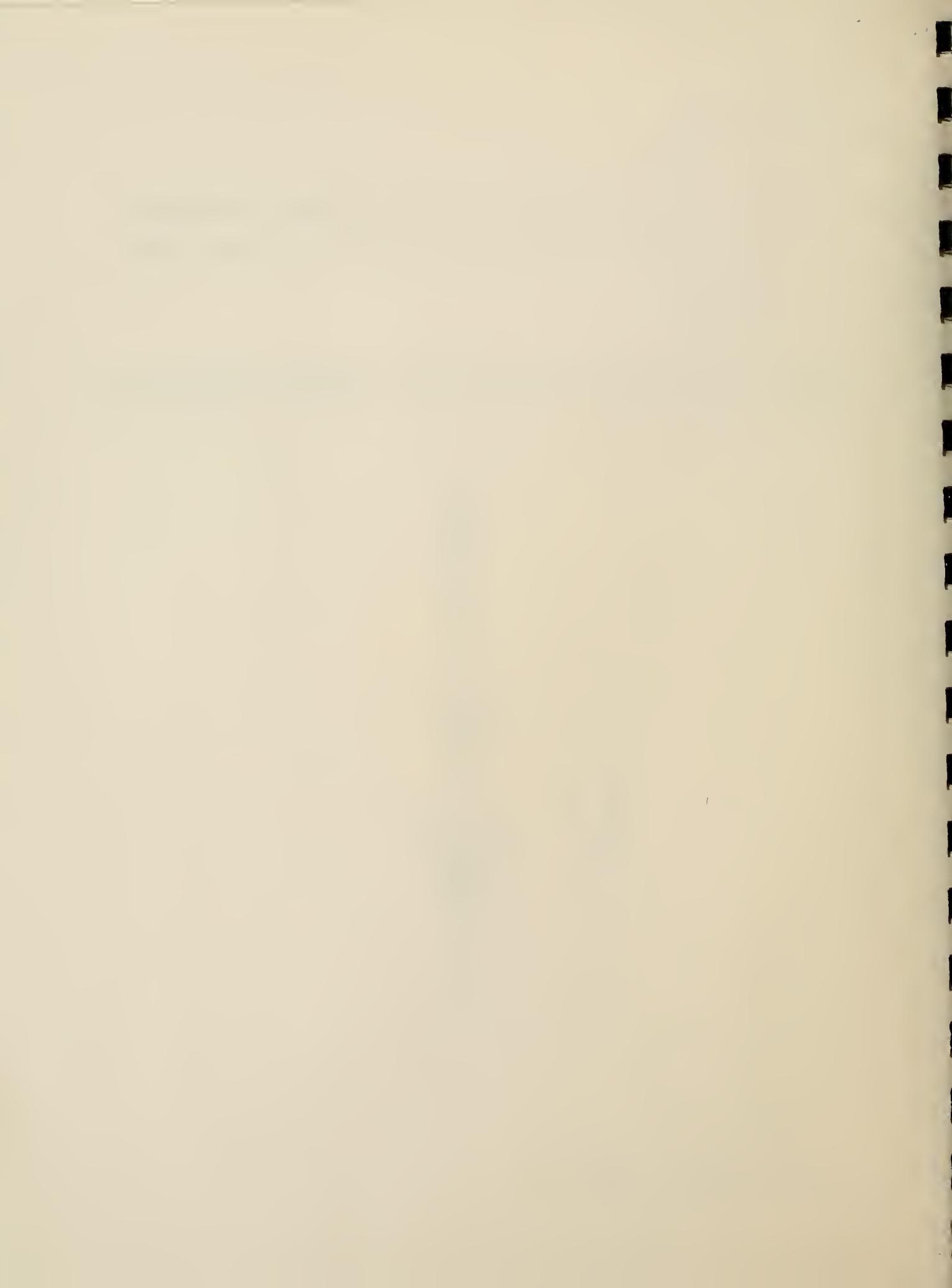
Equisetum fluviatile

Stems knee-high to shoulder-high, conspicuously jointed, not evergreen.

- Primarily found in marshes, shallow ponds, and slow moving streams
- Herbaceous
- Hydrophilic

Inland and occasionally coastal fresh marshes; thin-walled around a hollow center, usually with whorled branches, often with a spore-producing cone at the tip.





LEATHER LEAF

Chamaedaphne calyculata

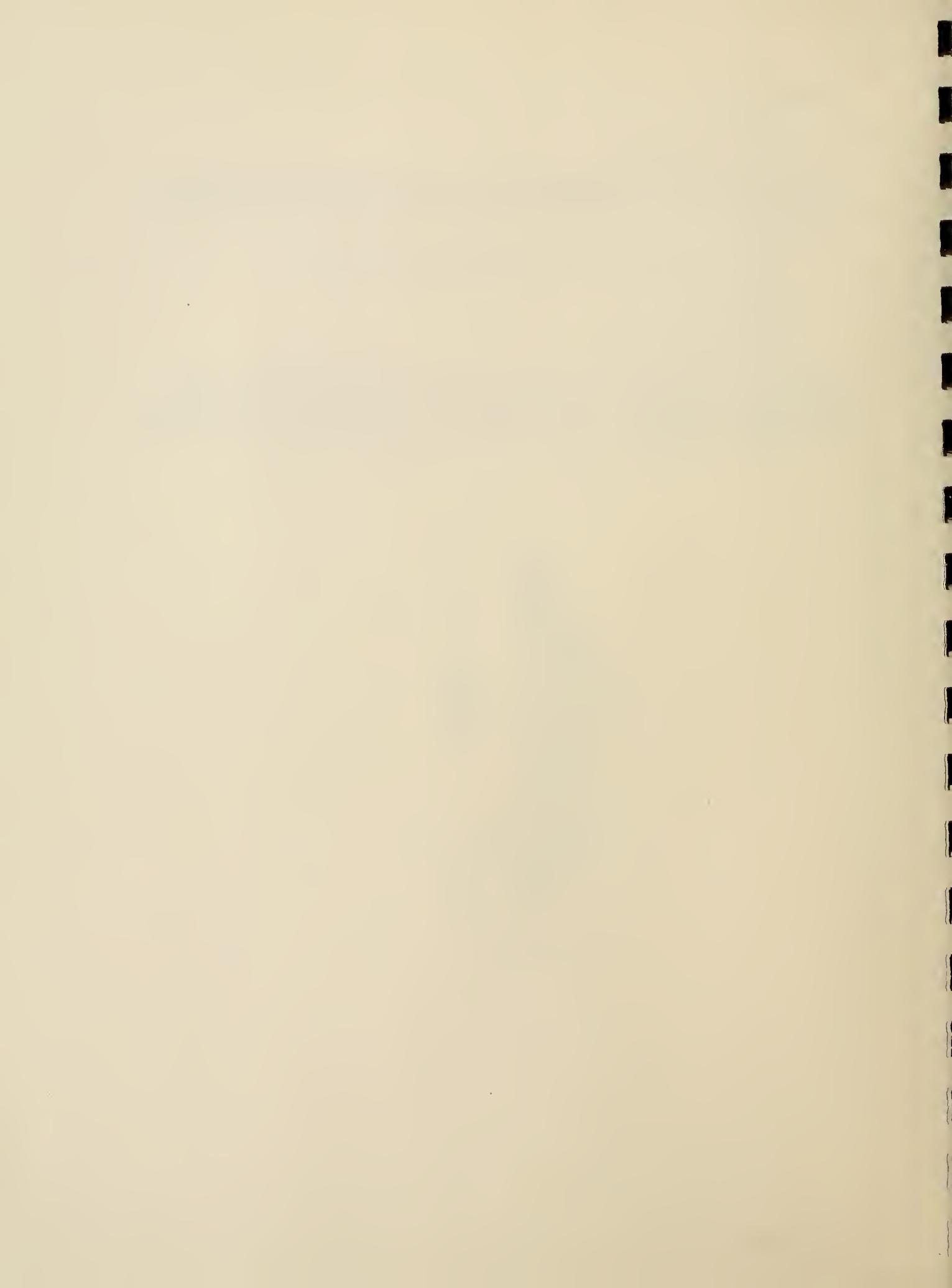
Leather-Leaf is in the heath family and is most readily distinguished by the urn-shaped white flowers and the tapering of the leaves toward the branch ends.

- Primarily found in marshes, swamps, and wet meadows
- Herbaceous plant
- Phreatophytic plant

Leather Leaf: Common shrub forming a dense cover to about two feet high, leaves leathery and semi-evergreen with roughened texture, characteristically tapering in size towards tips of branches. Flowers white, urn-shaped - along one side of stem tips. April to July.



Leather-leaf



PICKEREL WEEDS

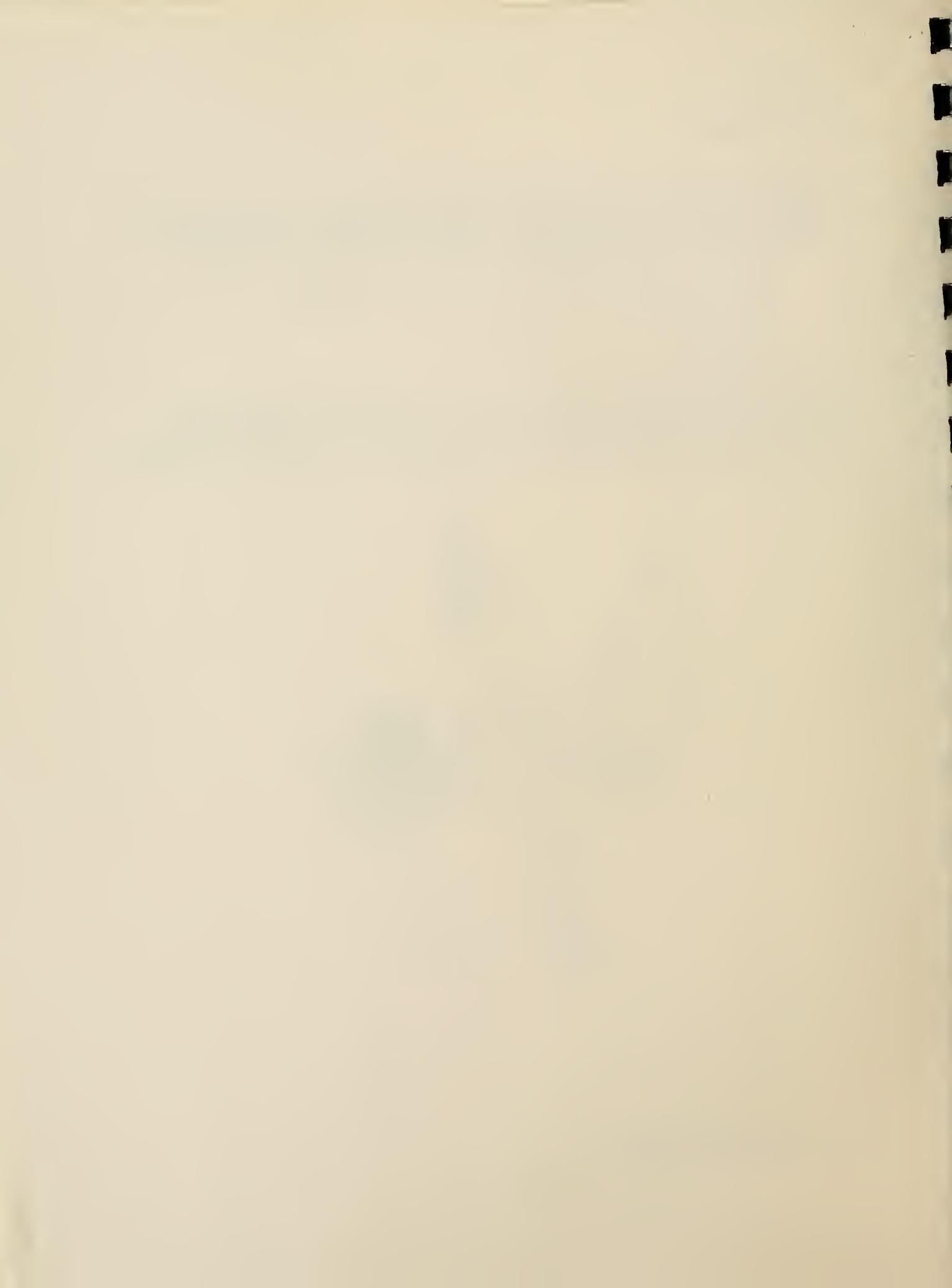
Pontederiaceae

Inland and coastal fresh marshes; leaves knee-high to waist-high, their blades varying from very narrow to wider than shown in the drawing. Flower stalks with one leaf below a spike of violet-blue flowers.

- Primarily found in marshes, swamps and wet meadows
- Herbaceous Plant
- Hydrophilic

Stout, fleshy emergent growing in shallow water or on muddy shores; leaves soft with heart-shaped bases; flower cluster a spike of violet blue flowers, throughout summer. Pickerel weed is usually first planted on the newland as a pond fills with sediment.





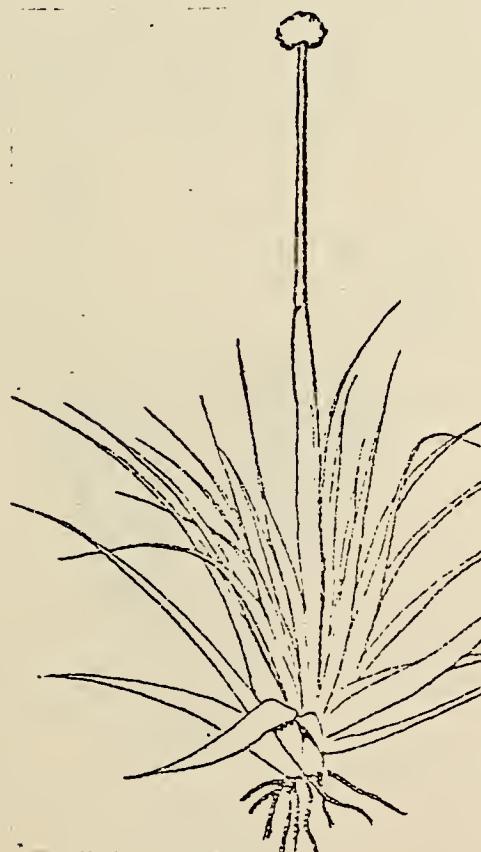
Pipeworts

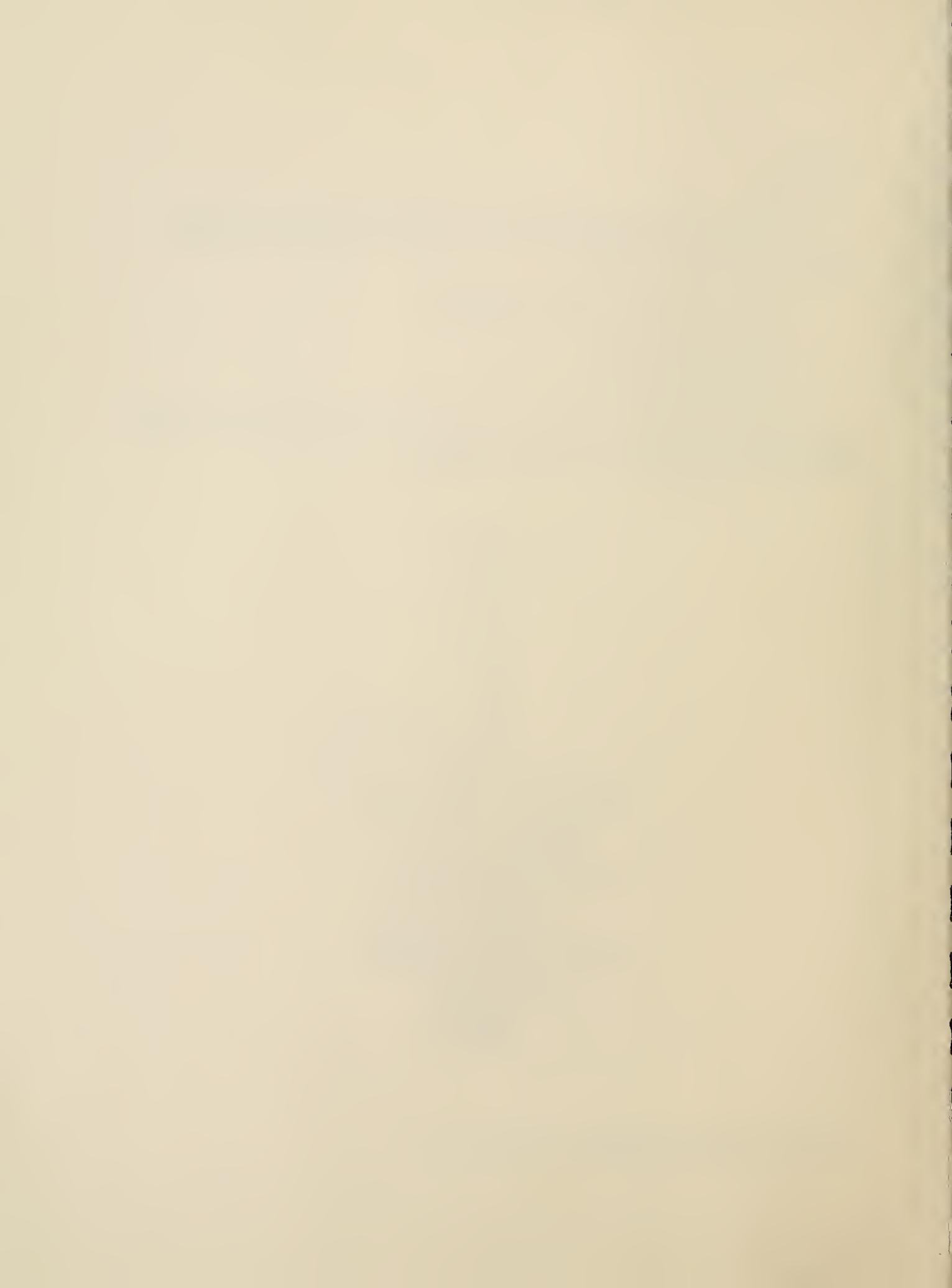
Eriocaulon

Two kinds of Pipewort which grow leaves under water and flower heads sticking out of water.

- Found in marshes and wet meadows.
- Phreatophytic plant
- A Herbaceous plant

Thin leaves taper from a wide base to a threadlike tip with fine veins.
Two types are early and nothern pipeworts.





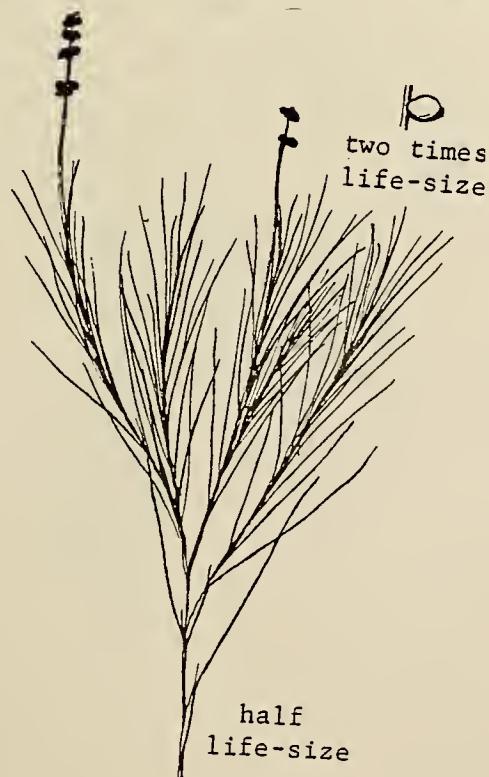
POND WEEDS

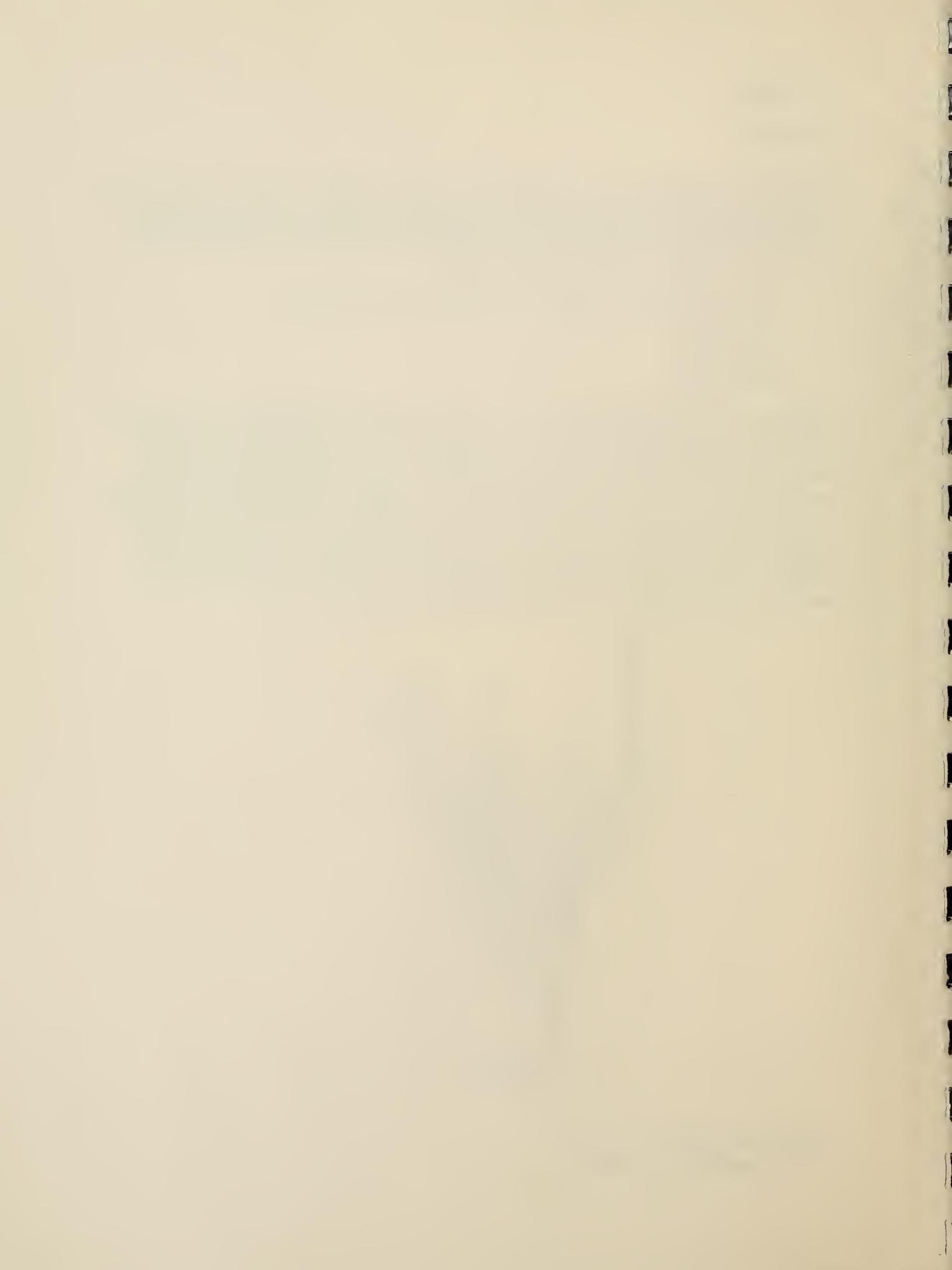
Potamogeton

Plants with threadlike to ribbonlike leaves scattered singly on flexible underwater stems, but often paired or bunched toward the stem tips; a few kinds also with oblong to oval floating leaves grow in fresh inland water and in fresh to salt coastal water.

- Primarily found in marshes, swamps and wet meadows
- Herbaceous
- Hydrophilic

Pondweeds are the largest family of truly aquatic seed plants. They are perennials, growing mainly in cool regions. More than 60 species grow in fresh-water ponds and lakes and some even brackish and salt water. Most fresh-water pondweeds have spikelike flowers; leaves usually alternate along the stem. The stems vary from upright to horizontal and from a few inches long to several feet; and usually they reach almost to the surface of the water, or even trail just beneath or on it. The underwater leaves collapse or partly collapse when taken out of water. In summer, pondweeds produce small greenish or brownish flowers which are usually close together in oblong or ball-like spikes.





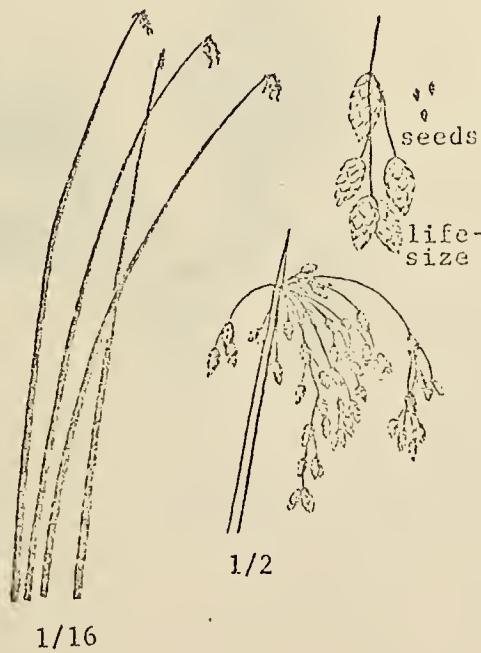
RUSHES

Juncaceae

Rushes are a plant requiring water for its environment. They often have hollow leaves and stems.

- Primarily found in marshes, swamps, and wet meadows
- Herbaceous plant
- Hydrophilic plant

Plants forming dense tussocks in open swamps and pastured lands; leaves and stems dark green, round in cross-section, ending in a spear-like point; inflorescence developing from one side of the stem as a cluster of small brownish flowers and capsules. A number of other species of rushes may also be found growing in the fresh-water wetlands.



SWEET GALE

Myrica gale

Grows in wetlands of this region. Its twigs give off a spicy odor when bruised.

- Primarily found in bogs and marshy areas
- Herbaceous
- Phreatophytic

This tall 6 to 8 feet, bushy shrub plant grows in marshy wetland areas of this region. Its particular characteristic are the flowers which are catkins, the male and female on separate plants.



Sweet Gale



WATER MILFOIL

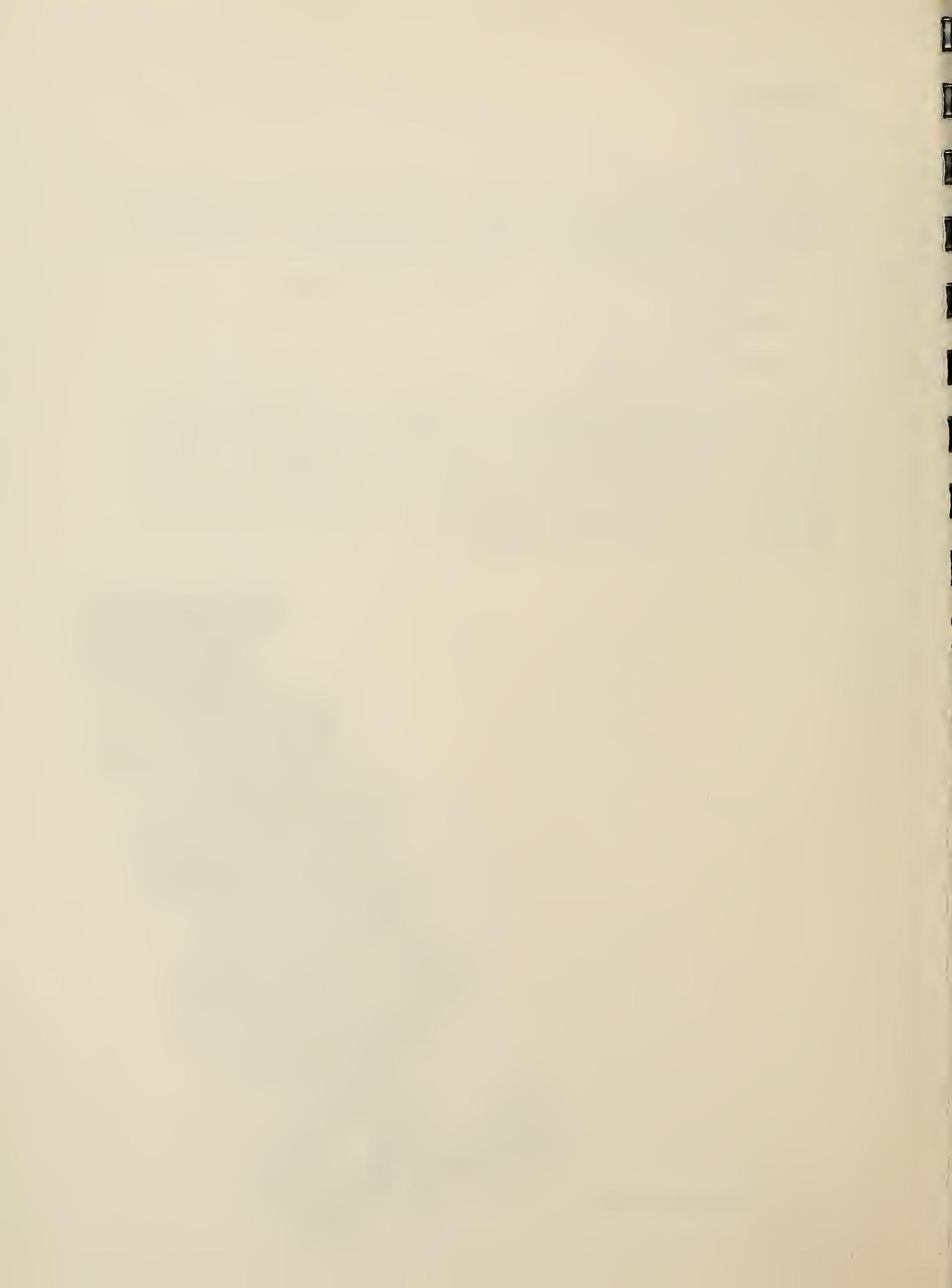
Myriophyllum

Finely branched leaves, small purplish flowers grow near stem tips where leaves may differ in size and shape from those at base. Widespread in quiet waters and slow streams in most of the region.

- Primarily found in marshes, swamps and slow streams
- Herbaceous
- Hydrophilic

Plants with featherlike, usually limp leaves on flexible underwater stems; stem tips often sticking out of water grow in fresh inland water and in fresh to brackish coastal water. The stems vary from upright to horizontal and from a foot long to several feet; and they are usually branched. Most Watermilfoils are hard to tell apart when they don't have flowers or seeds. When in bloom, most of them have tiny brownish flowers in spikes which stand above the water. When the seeds are ripe, the spikes are usually lying in water.





WATER LILIES

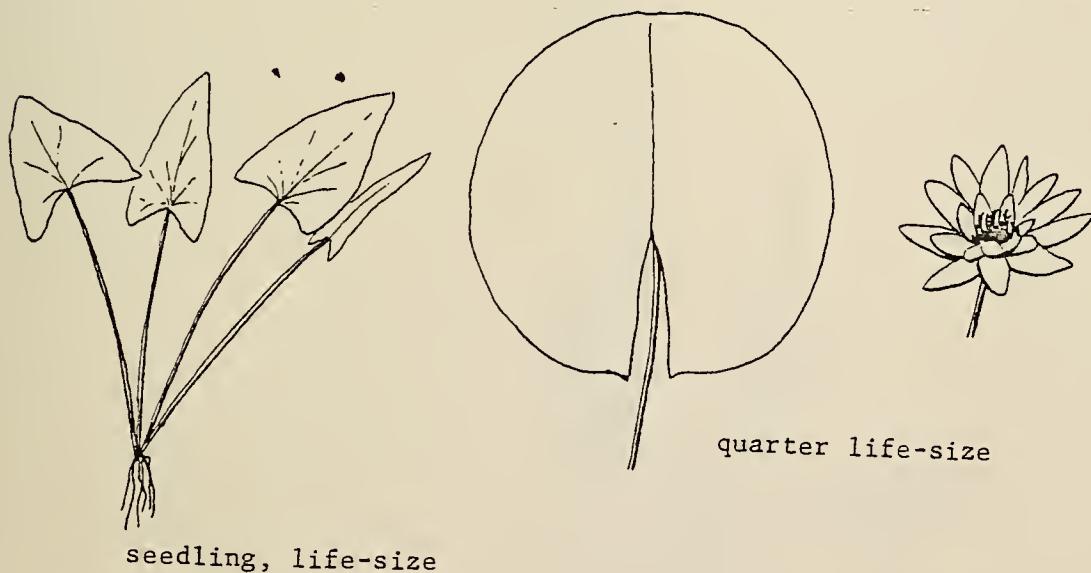
Nymphaeaceae odorata

Water Lilies have leafy blades, nearly round, floating 2-10 inches in diameter. Rooted in mud with floating leaves.

- Primarily found in shallow standing water, swamps and wet meadows
- Herbaceous
- Hydrophilic Plant

Leaves of mature plants are firm and usually floating. Leaves of seedlings are flimsy and clustered under water. Flowers white or rarely pink.

Seedlings of all the Waterlilies resemble each other; but usually only one kind grows in a locality. White Waterlily seedlings resemble Spatterdock seedlings with which they often grow; but Waterlily leaves have sharper tips, and most of the veins radiate from near the base.



WATER STARWORTS

Callitrichie

Water starworts are found in shallow ponds and slow moving streams, the top leaves floating on the water surface. A small plant with slender stems and spatula-shaped leaves that form floating cluster.

- Primarily found in marshes, shallow ponds and slow moving streams
- Herbaceous
- Hydrophilic

Starworts are located in fresh water, inland but rarely coastal, often in partly-shaded streams.

Seeds are partly-joined to each other in fours at the base of leaves. Under water, each of these plants has narrow leaves. All except *Callitrichie hermaphroditica* also often reach the surface and there produce a cluster of oval floating leaves; and during low water they grow on mud and have oblong leaves. Under water, when without flowers or seeds, Water-starworts resemble slim plants of Common Elodea; but the leaves are bunched only a little toward the tip of stems, and there are only two leaves at a joint.



WATER WILLOW LOOSESTRIFE

Decodon verticillatus

A typically shrubby plant invading open water by rooting at the tips of the arching branches. Leaves opposite or in whorls of three, clusters of magenta flowers at their bases.

- Primarily found in marshes and wet meadows
- Herbaceous
- Phreatophytic

Stems curved and often several feet long, their tips reaching the ground or water. Under water, the bark is very thick and spongy. Leaves in twos, threes, or fours, to 6 inches long. Flowers purplish-pink.



SWAMP PLANTS

Asters (*Aster nemoralis*)
Alders (*Alnus*)
Ashes (*Fraxinus*)
Azaleas (*Rhododendron canadense* & *r. viscosum*)
Black Alder (*Ilex verticillata*)
Black Spruce (*Picea mariana*)
Buttonbush (*Cephalanthus occidentalis*)
American or white elm (*Ulmus americana*)
White Hellebore (*Veratrum viride*)
Hemlock (*Tsuga canadensis*)
Highbush Blueberry (*Vaccinium corymbosum*)
Larch (*Larix laricina*)
Cowslip (*Caltha palustris*)
Poison Sumac (*Toxicodendron vernix*)
Red Maple (*Acer rubrum*)
Skunk Cabbage (*Symplocarpus foetidus*)
Sphagnum Mosses (*Sphagnum*)
Spicebush (*Lindera benzoin*)
Black Gum Tupelo (*Nyssa sylvatica*)
Sweet Pepperbush (*Clethra alnifolia*)
White Cedar (*Chamaecyparis thyoides*)
Willow (*Salicaceae*)



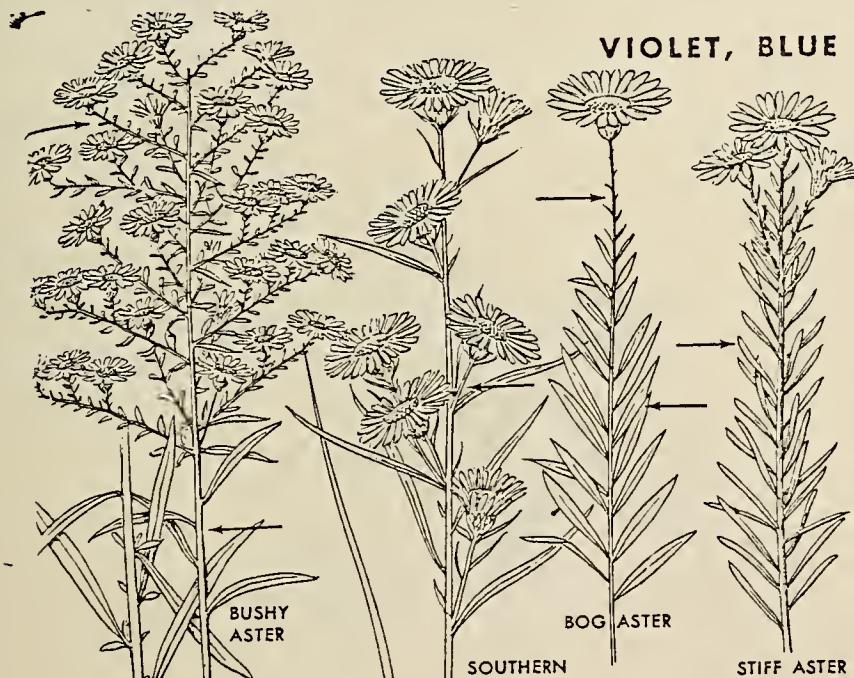
ASTER

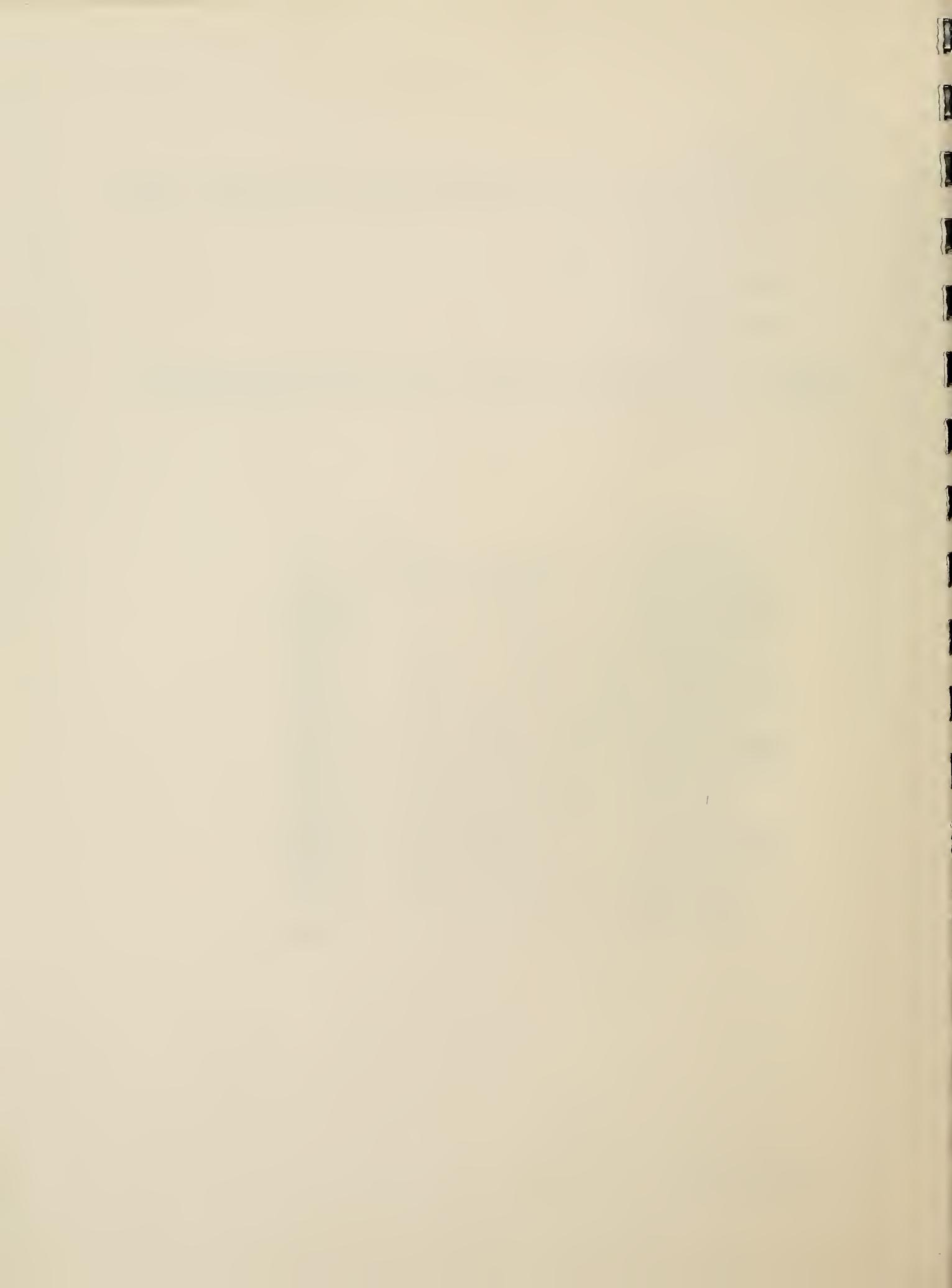
Aster nemoralis

Flower heads are large about 1-1½ inches and are a violet-purple. Stems are long and narrow.

- Primarily found in bogs
- Herbaceous plant
- Phreatophytic

Several flower heads exist on slender stock; floral bracts very narrow, purple-tinged. Leaves very numerous, narrow, tapering at the ends, sessile, toothless.





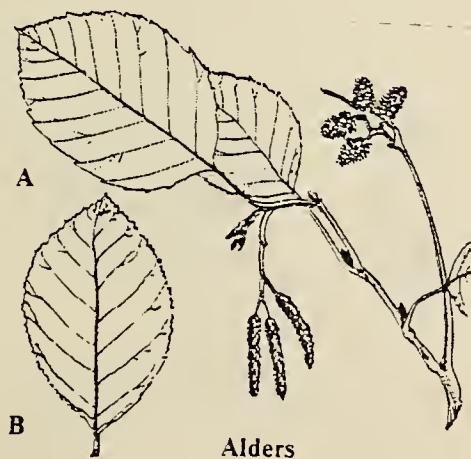
ALDER

Alnus

Common shrub of swamps and stream margins found in clusters and thickets up to 15 ft. high. They may be distinguished by clusters of small, woody cone-like fruits and elongated catkins (male flower) present in winter.

- Primarily found in swamps
- Phreatophytic plant
- Woody shrub

Buds are stalked with 2 or 3 nearly equal, valvate scales; both staminate and pistillate catkins are naked and conspicuous in winter. Green alder (*A. crispa*), the buds are sessile, covered by 3-6 unequal, imbricated scales and pistillate catkins are enclosed in buds during winter. Northern Species, the leaves are round-oval, irregularly serrulate. Located on cool shores and in mountains.



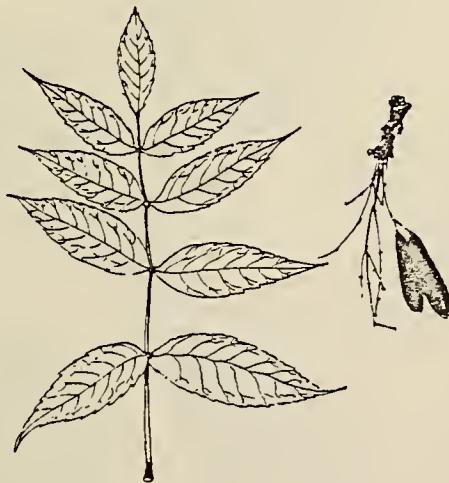
ASHES

Fraxinus

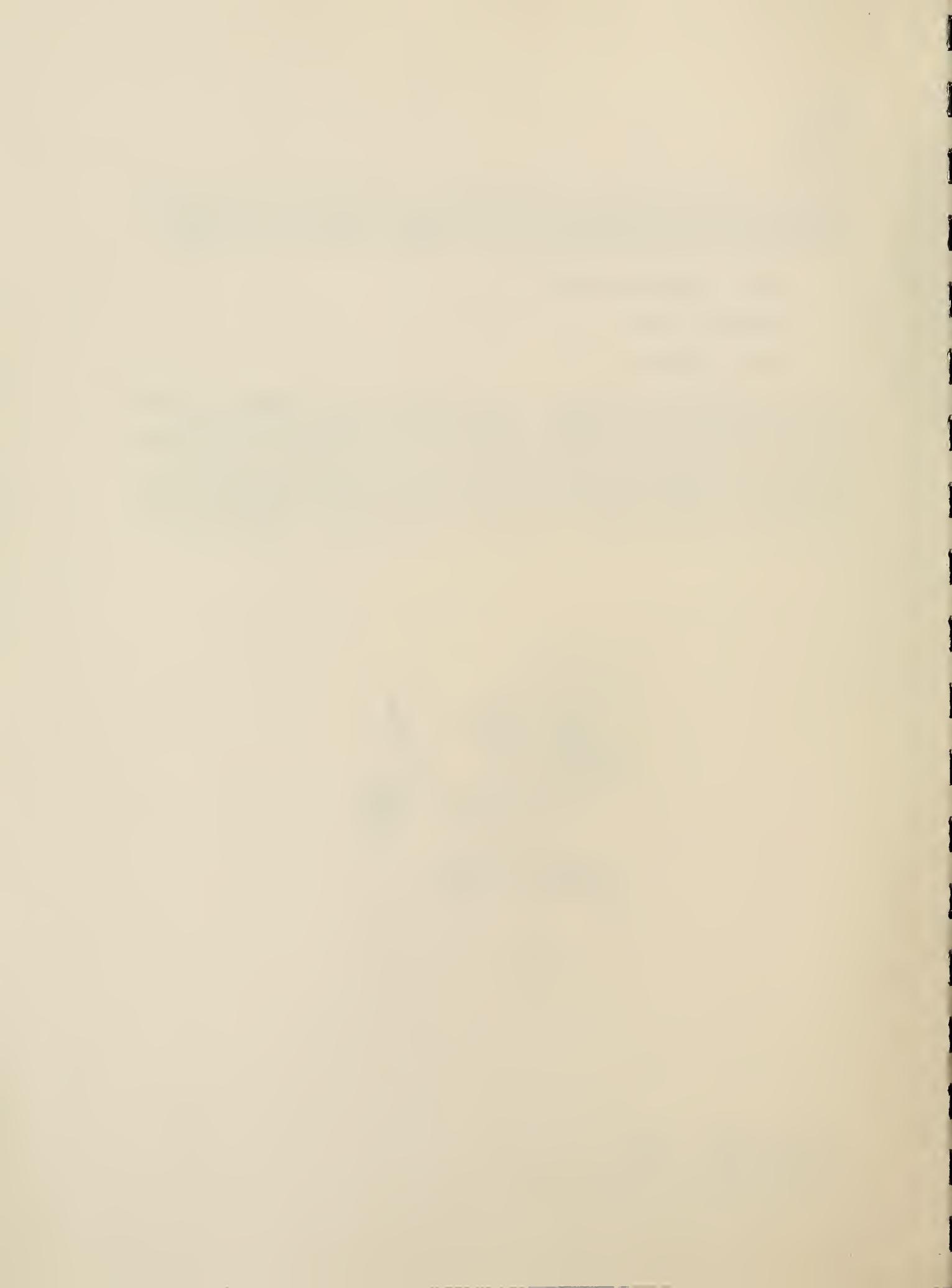
Ashes are characterized by compound leaves. The leaflets are arranged opposite along the stem with a single terminal leaflet. The leaflets are toothed and pointed with usually at least 5 leaflets on a stem.

- Common in swamps and moist soil
- Superfluous plant
- Medium sized tree

Leaves are pinnately compound; a true terminal bud is present; the leaf scars are crescent or C-shaped. Black Ash (*F. nigra*), the bust are usually black and rather sharp pointed. The first pair of lateral buds are at a short distance below the terminal bud, giving it a stalked appearance; branches are stout, yellow or buff-colored, not shiny but smooth; leaf scars ar circular to semicircular; large trees have corky bark which rubs off easily; the fruit is an elongated flattened wing.



Black Ash



AZALEA

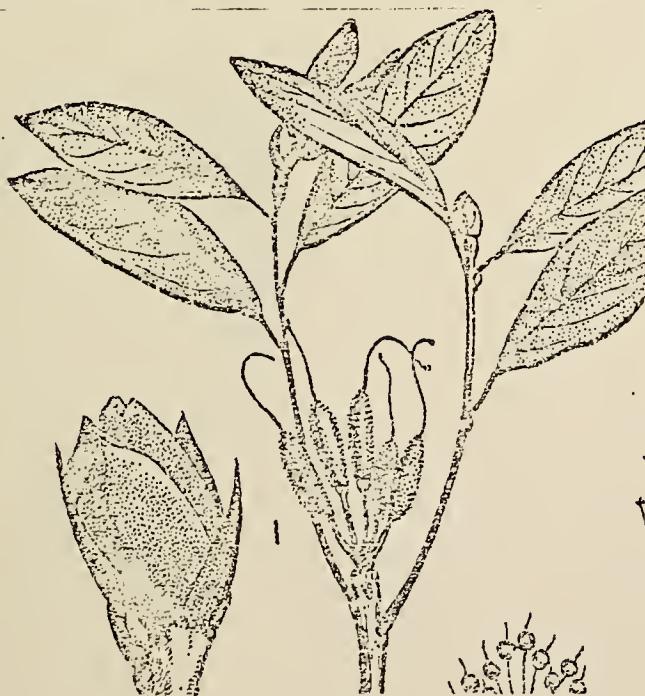
Rhododendron

Shrubby plants with deciduous leaves in a whorled shape at the end of the branches. Fragrant flowers from white to pink to deep rose blooming in June and July.

- Found in swamps and marshes
- Phreatophytic plant
- Woody Shrub

The Swamp-honeysuckle (*R. viscosum*), has deciduous, shining, somewhat narrow leaves toward their bases, often arranged in a conspicuous, flat mosaic near tip of branch; branches are bristly; the flower buds large, with ciliatescales, the terminal leaf buds are much smaller; flowers after the leaves in June or July, white fragrant, sticky. A branching shrub about eight feet tall.

Also Azalea (*R. Canadense*), belongs in the azalea group of deciduous leafed rhododendrons. A low shrub, about 3 feet in height and distinguished by its pale, more or less pubescent leaves and pale to deep rose purple flowers. This species is a tolerant plant.



WINTERBERRY, BLACK ALDER

Ilex verticillata

A shrub with toothed, deciduous leaves growing to about 6-8 feet. It has red berries similar to American holly. The winterberry is becoming scarce.

- Commonly found in swamps
- Phreatophytic plant
- Woody shrub

Leaves are deciduous, serrate, dull above, highly variable in shape, not spiny; the berries are red and much the same as in American Holly. The branchlets are very slender, dark purple or grayish purple; buds tiny, blunt, single or often superposed, a small one very close to the base of a larger one; true terminal bud and minute stipule scars. A shrub about 6 to 8 feet tall, and a small inconspicuous white flower.



Black Alder

BLACK SPRUCE

Picea marriana

When growing in lowlands black spruce is usually found in cold swamps. Spruce trees have downward angled branches and drooping cones.

- Primarily found in swamps
- Phreatophytic plant
- A small tree, usually less than 100 feet.

The leaves are four-sided, needle-shaped, borne on distinct short peg-like projections on the stem which remain when leaves are shed, giving branch a rough appearance and feel; cones drooping. Cones are egg-shaped or nearly spherical, gray-brown ($\frac{1}{2}$ - $1\frac{1}{2}$ inches long) cone scales finely toothed.



Black Spruce

BUTTONBUSH

Cephalanthus occidentalis

The leaves of buttonbush are egg shaped, without any teeth along the edge. They are either opposite or in 3's or 4's. The branches are brittle and the ends of the stems are often dying back.

- Primarily found in swamps and wet soil
- Phreatophytic plant
- Deciduous, woody shrub

A shrub with ovate, entire leaves, opposite or in 3's or 4's, with triangular stipules; small buds in depressed areas and surrounded by outer bark, above the circular leaf scars; branches rounded, dying back or bearing flowers; pith light brown, more or less 4- or 6-sided; flowers small, white, in July and August in dense, spherical heads, and small dry persistent fruit clustered the same way; straggling, brittle shrubs with opposite leaves.



Buttonbush

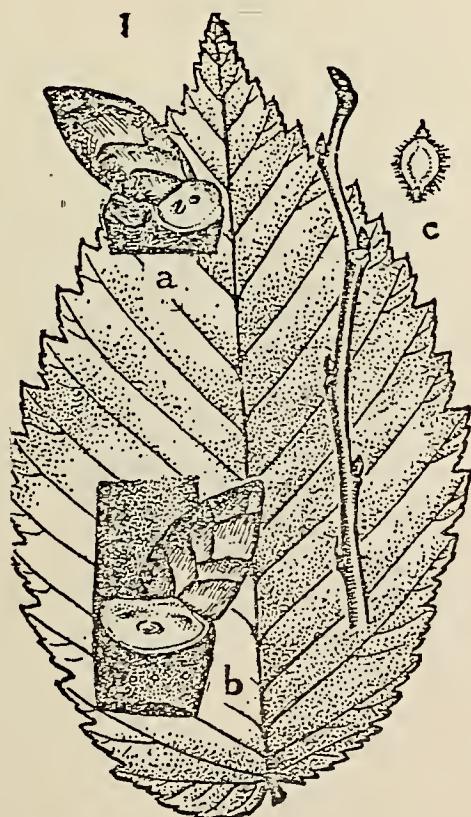
ELM

Ulnus

A large tree with large, alternate, toothed (nearly jagged) leaves. Elms are a common tree in moist as well as dry soils.

- Found in moist soils, swamps, marshes, stream margins
- Tolerant plant
- Large tree

The fruit is surrounded by a membranous wing; leaves usually inequilateral at base; buds with about 6 scales exposed, arranged in 2 ranks; flower buds (in spring flowering kinds) much larger than leaf buds; true terminal bud absent; stipule scars unequal; bundle scars 3 or in 3 groups. Slippery Elm, (*U. rubra*) leaves large (4-8 inches) very rough above to the touch. Ovate, oblong, pointed doubly serrate, pubescent below, not symmetrical at base. Branchlets gray or sometimes brown, pubescent and rough touch; bark is mucilaginous when chewed.



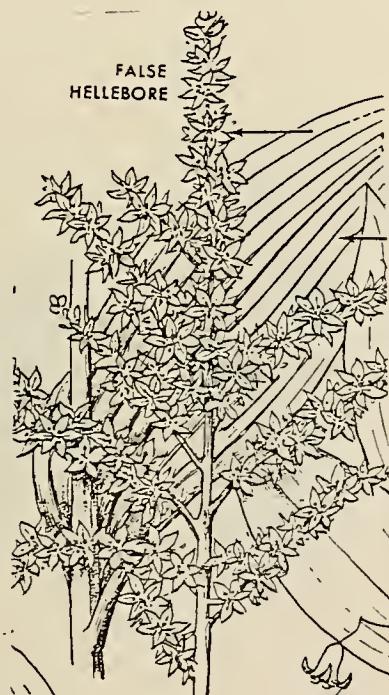
WHITE HELLEBORE, INDIAN POKE, FALSE HELLEBORE

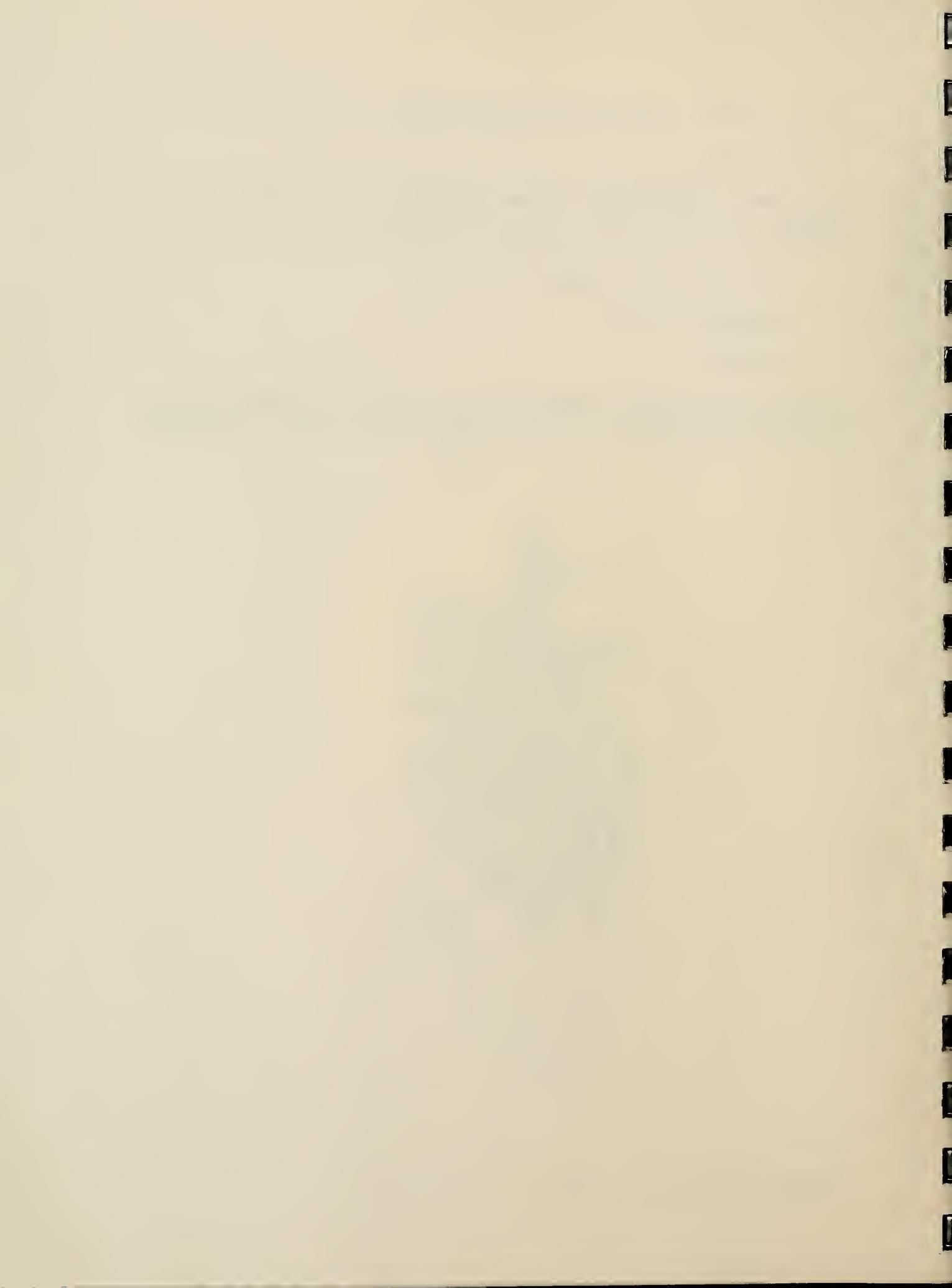
Veratrum viride

The flowers of Hellebore are green, star-shaped and in large clusters. They bloom from May to July. They also have large heavily ribbed leaves.

- Primarily found in swamps and wet woods
- Phreatophytic plant
- Herbaceous

Large clasping, heavily ribbed leaves are conspicuous in early spring. Flowers are star-shaped, in large clusters (8-20 inches), yellow-green at first, dull green later, 2-8 feet high.





HEMLOCK

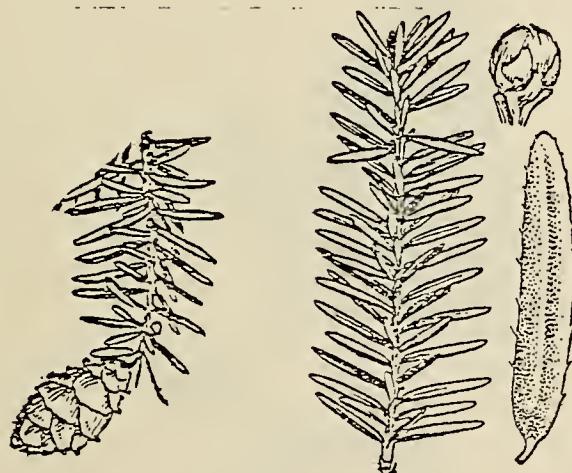
Tsuga

Eastern Hemlock is a tall tree, 60 to 100 feet, with a gracefully spreading spray. The bark is deeply fissured on old trunks. The foliage is delicate looking and falls quickly in dry conditions.

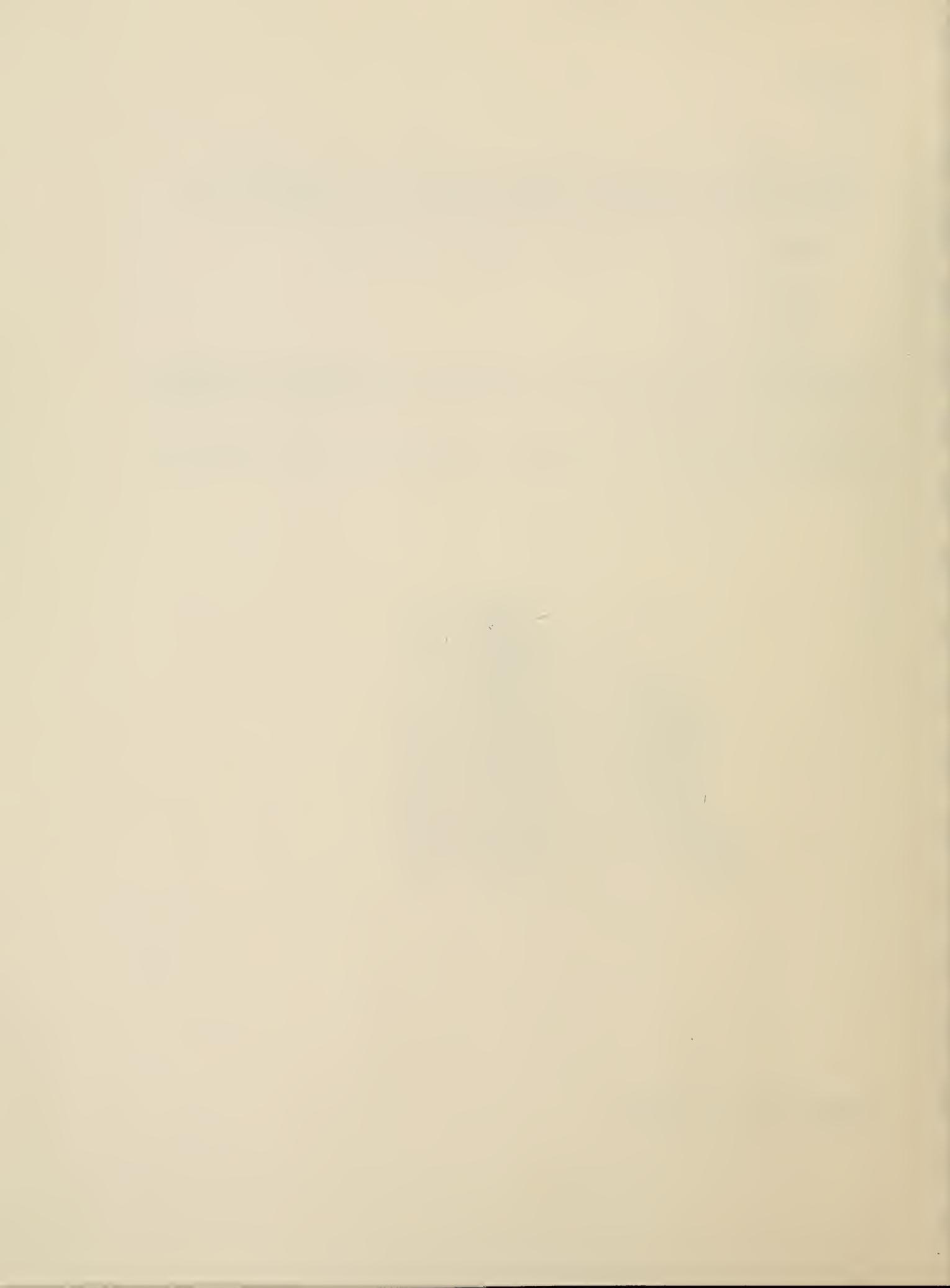
- Found in swamps and marshes as well as dryer soils
- Tolerant plant.
- Coniferous tree

The leaves are linear, flat with two white lines beneath, and distinct short petioles. Leaves borne on slight elevation on stem, which are not as pronounced as in Spruce.

Also Eastern Hemlock, (*T. Canadensis*), the leaves are finely toothed on the margin (seen with a lens), blunt at the tip.



Graves Guide, PP. 55 & 56.
Core and Ammons, P. 33.



Highbush Blueberry

Vaccinium corybosum

A common bush in swampy areas, often forming thick clumps. A white urn-shaped flower in spring and a blue-black fruit in July and August.

- Common in swamps
- Tolerant plant
- A woody shrub

Tall branchlets green or often reddish; flower buds red, plump, pointed the scales each with a prominent, spinelike point. Leaves entire, usually somewhat pubescent below. Fruit blue-black, glaucous, sweet and juicy. Up to 12 feet high, forming compact or open clumps, twigs angled and warty, buds ovoid or oblong. Flowers white, urn-shaped, fruit in July and August. Fall foliage turns brilliant red in open sunny sites.



Graves Guide, pp. 211 & 212.
Core and Ammons, pp. 176 & 177.
Inland Wetlands of Conn., p. 16.



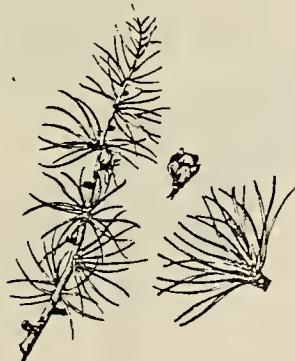
LARCH, TAMARACK

Larix laricina

A small, coniferous tree with deciduous leaves, soft, light green. The bare twigs have a knobby appearance.

- Primarily found in swamps, marshes and bogs
- Phreatophytic plant
- A small coniferous tree with deciduous leaves

The leaves are borne mainly in whorl-like clusters at the ends of short, spurlike branches. A slender tree, 30 to 60 feet high, with horizontal or ascending branches.



Larch

Graves Guide, p. 60.
Inland Wetland of Conn., p. 20.
Core and Ammons, p. 35.

COWSLIP, MARSH MARIGOLD

Caltha palustris

These yellow flowers are often found growing in profusion along quiet creeks and in ditches and regularly wet meadows. The flower is larger but very similar to a buttercup flower.

- Common in wet meadows and along stream margins
- Phreatophytic plant
- Herbaceous plant

The leaves are roundish to kidney-shaped with the margin toothed and the leaf glossy. The flowers are larger than true buttercups, deep yellow petals, from April to June. Stems are thick, hollow and succulent.



Marsh-marigold



POISON SUMAC

Toxicodendron vernix or Rhus vernix

A shrub growing up to 25 feet in height with compound, untoothed leaves, 7 to 13 opposite leaflets on a stem. Poison sumac is a common woody plant in swamps and wet areas, it is poisonous to the touch.

- Common in swamps and wet areas
- Phreatophytic plant
- Woody shrub

The branches are smooth, speckled with dark dots (lenticils), true terminal bud, leaves entire, fruit whitish. The bark is light to dark gray and glabrate.



Poison Sumac

Graves Guide, p. 163.
Core and Ammons, p. 134.
Inland Wetlands of Conn., p. 14.

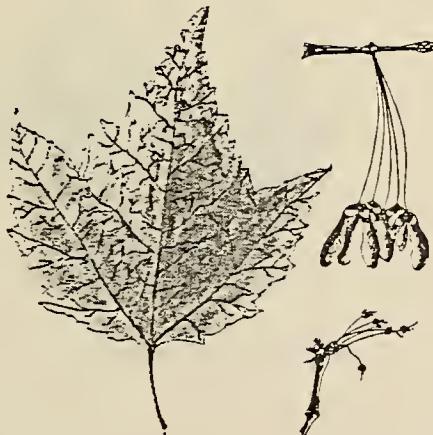
RED MAPLE

Acer rubrum

The red maple is found in swamps or lowlands, though also in dryer soil. The characteristic V-shaped indentations of the leaves help to distinguish it. It also has red flowers in early spring and the fall foliage is scarlet.

- Common in swamps and wet soil
- Tolerant plant
- A large tree, over 100 feet

The bark is scaly and on young trees and branches the bark is pale as in the beech. Buds are small and red. Leaves with sharp indentations between the lobes, glaucous beneath. There are 3 to 5 lobes, which are sharply toothed. The fall foliage is scarlet and the red flowers appear in early spring long before the leaves.



Red Maple

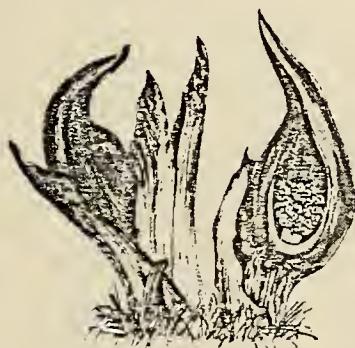
SKUNK CABBAGE

Symplocarpus foetidus

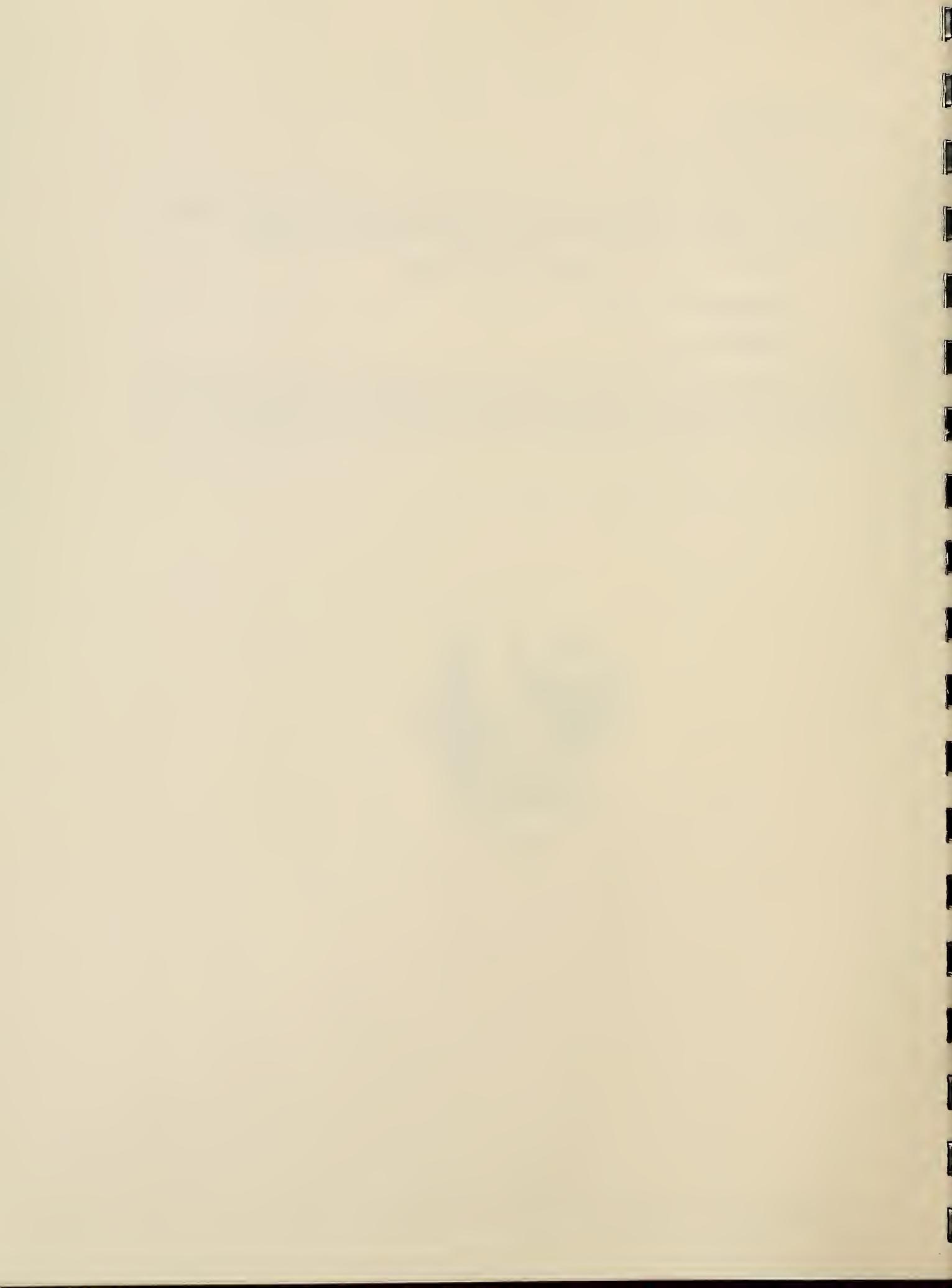
The most common characteristic of these large leafed plants is the skunk like odor when the leaves are bruised, hence the name.

- Primarily found in swamps and wet woods
- Phreatophytic plant
- Herbaceous plant

The large fleshy leaves are somewhat heart-shaped, with a rank odor of skunk when bruised. A globular mass of flowers borne in earliest spring within a fleshy, purple-spotted enveloping leaf-like structure.



Skunk-cabbage



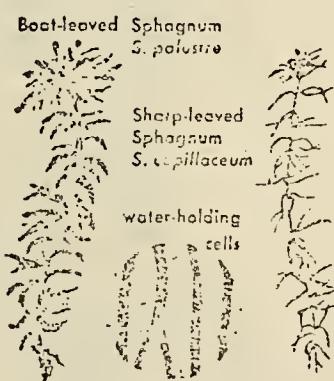
SPHAGNUM MOSS

Sphagnum

Sphagnums are the most familiar mosses in bogs and cool ponds, the green mats along the edges or floating over the water surface. Mosses hold several times their weight in water keeping them moist in dryer weather.

- Primarily found in wet areas, ponds, swamps, marshes and bogs.
- Phreatophytic plant
- A Herbaceous plant

The species of sphagnum are identified by several features. In one group the branches form rather thick tufts, and the walls of the empty cells are strengthened by spiral thickenings that are clearly visible as lines. In another group, the branches are slim and tapered, and the empty cells do not have spiral thickenings.





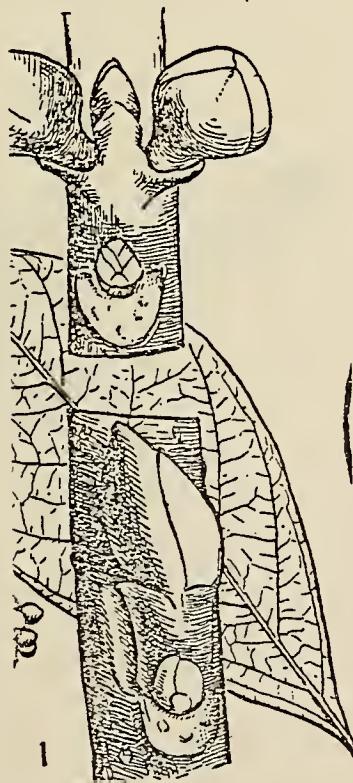
SPICEBUSH

Lindera benzoin

The branches of the spicebush have a spicy odor. The leaves are untoothed and narrower at the base, coming to a wider point.

- Primarily found in swamps
- Phreatophytic plant
- A woody shrub

The branches have a characteristic spicy odor; buds are of two kinds, flower buds larger and globular, leaf buds smaller and pointed, with 2-3 scales showing. On the branches where the flower buds occur, they are typically arranged in pairs at the nodes, one on each side of a leaf bud; often extra or accessory flower buds occur. The twigs are rounded, slender, green. Red twigs and buds glabrous; the shrub grows to between 5 and 15 feet.



Graves Guide, p. 126.
Core and Ammon, p. 98.



BLACK GUM TUPELO

Nyssa sylvatica

The black gum often has a swelled base if found in standing water. The branches are wide angled, similar to a pear tree. The leaves turn crimson very early, sometimes in August.

- Found in swamps and on lake edges
- Phreatophytic plant
- A large tree

Large tree with many short wide angled branches. The leaves are alternate, simple, narrowly obovate, turning crimson very early. Leaf scars are reddish brown, with 3 very distinct vascular bundle scars in a straight or slightly curved row; no stipule scars. The fruit is a small dark drupe; the buds are smooth, ovoid, pointed, dark reddish brown. The leaves are leathery and shiny with an abrupt tip. The tupelo reaches a height of 100 to 130 feet.



Black Gum

Graves Guide, p. 187.
Inland Wetlands of Conn., p. 16.
Core and Ammon, p. 157.

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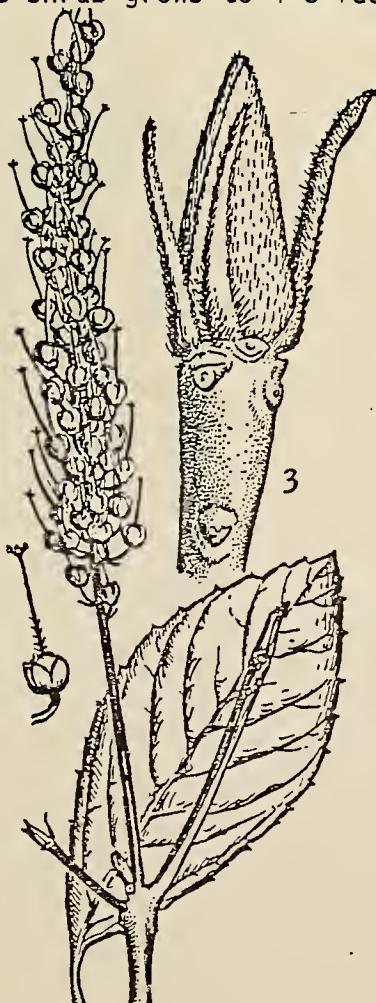
SWEET PEPPERBUSH

Clethra alnifolia

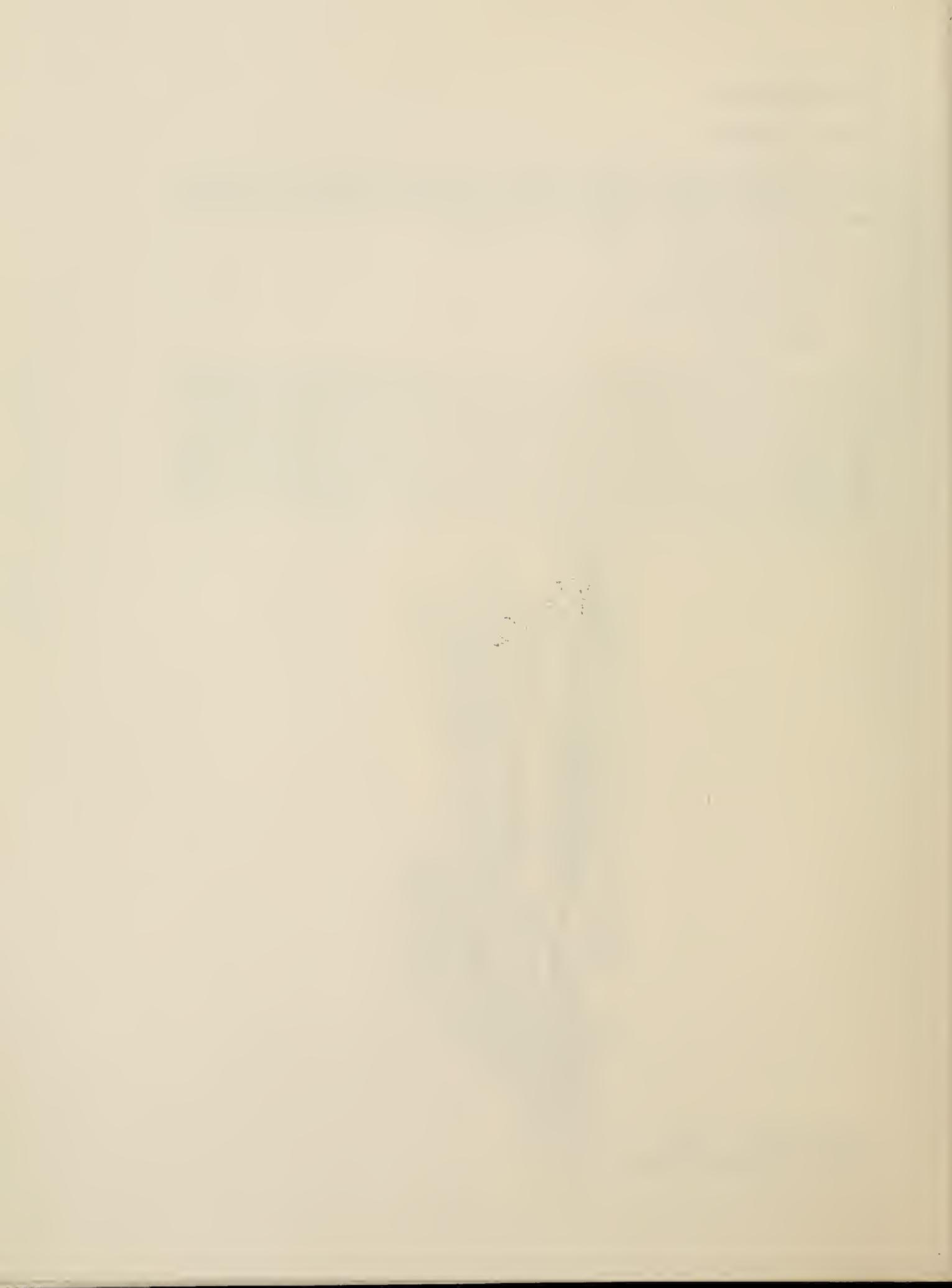
The long spikes of small white flower in July and August are the most striking characteristic. The leaves are narrowed at the base and wider toward the tip, they are toothed and smooth.

- Common in swamps
- Phreatophytic plant
- A Woody shrub

A shrub with long, erect spikes of white, fragrant flowers in July and August. Terminal buds are large and pointed, lateral buds very small and inconspicuous or developing into short branches the same season. The branchlets are downy or scurfy, angled; the outer bark peeling off the second year. The leaf scar is oval or triangular, with the bundle scar forming a prominent semicircular on a broad U-shaped ridge. The leaves are obovate, pointed, smooth and serrate. The fruit is a persistent, brown capsule. The shrub grows to 4-8 feet high.



Graves Guide, P. 198.
Inland Wetlands of Conn., P. 16.



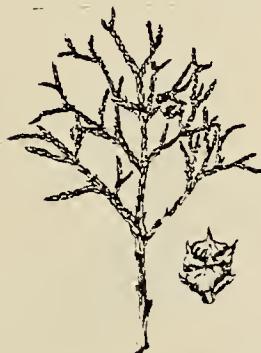
WHITE CEDAR

Chamaecyparis thoides

The white cedar is a coniferous tree found in swamps, having thin, ashy gray to reddish bark.

- Primarily found in swamps
- Phreatophytic plant
- A small coniferous tree

The leaves are small and scale like. The cones are composed of shield-shaped scales, the scales being fitted together in such a way that the whole forms a little ball.



Southern White Cedar



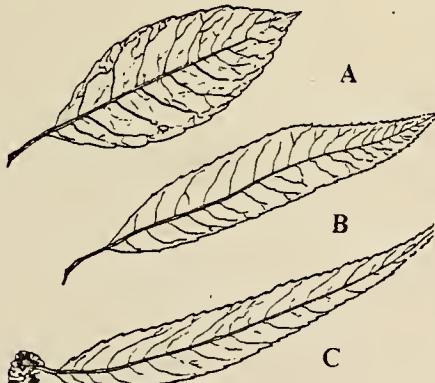
WILLOW

Salicaceae

Several of the willows are easily recognized the weeping willow, a large tree with drooping branches; and the pussy willow with the large hairy "pussies". Willows generally have smooth flexible twigs and narrow, finely toothed leaves.

- Common in swamps, along stream margins and moist soil
- Phreatophytic plant
- From large trees to dense shrubby thickets

Both staminate and pistillate flowers in catkins. The leaves are alternate, simple, mostly long and narrow; the bark is bitter; the wood is light and soft. Buds covered by a simple hollow-conical scale, true terminal buds absent. Tree trunks 1 or 2-4 together, often leaning. Shrubs often clumpy and sometimes forming thickets by growth of underground runners. The bark on young twigs is usually smooth, yellow, green, brown, purplish or black. The large number of species of willow result in the need for a guide to accurately determine species types.



Willows



OTHERS

Pitcher Plant (*Sarracenia purpurea*)

Tree-of-Heaven (*Ailanthus altissima*)

False Solomon's Seal (*Smilacina racemosa*)

Bog Laurel (*Kalmia polifolia* wang)

Reeds (*Phragmites communis*)

Sundew (*Drosera rotundifolia* ltd. *intermedia*)



PITCHER-PLANT

Sarracenia purpurea

An unmistakable bog plant with pitcherlike leaves, heavily veined, red or green, usually half filled with water. The Leaf lips are flared and the flower is dull red on a separate stalk.

- Found primarily in bogs
- Phreatophytic plant.
- Herbaceous plant.

The lips of the leaves are lined with downward pointing bristles that help trap insects that are then drowned and then their nutrients absorbed. The flower is borne on a stalk about twice the height of the leaves from June to August.





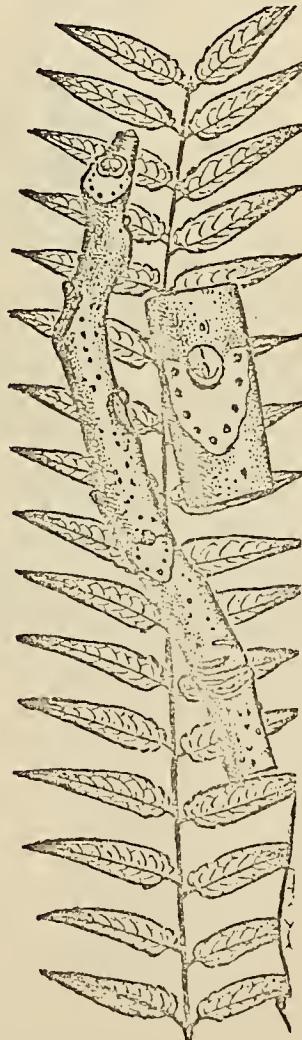
TREE-OF-HEAVEN

Ailanthus altissima

A tree known for its great tolerance of adverse conditions, often found in city lots. The long pinnate leaves are one of the familiar characteristics.

- Found in wet and very dry, adverse condition
- Superfluous plant.
- A tree, often found at shrub height

Branches are thick (extremely so on young shoots); leaf scars are large, heart-shaped; the buds are somewhat pubescent, small, with 2 or 4 scales exposed. The leaves, 1-2 feet long, with a few blunt, glandular teeth at the base of each leaflet, the sap is not milky.



Graves Guide, P. 160.



FALSE SOLOMON'S-SEAL

Smilacina racemosa

A gracefully leaning stem with alternate, oval, pointed leaves and tipped with a cluster of white star-like flowers.

- Found usually in woods
- Superfulous plant
- A Herbaceous plant

The fruit is a berry at first whitish speckled with brown, later ruby-red. Flowering from May to July. The true Solomon's Seal has its flowers in the axils, not in terminal clusters.



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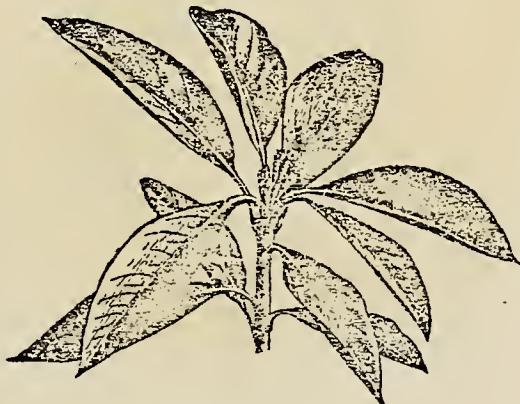
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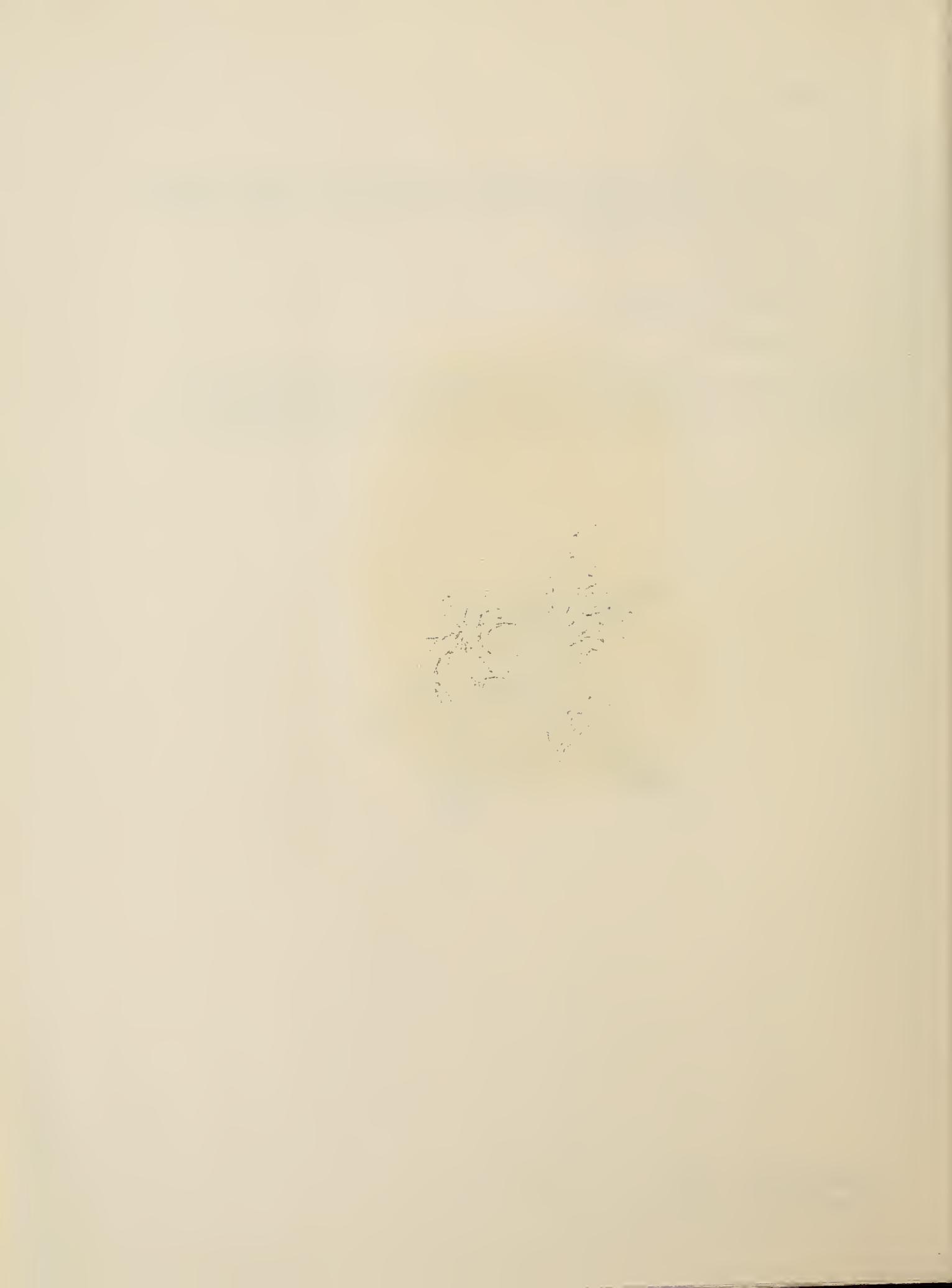
Kalmia polifolia wang

A short shrub found in bogs with opposite leaves that are whitish beneath and a lustrous green on top. The edges of the leaves are often rolled; the flowers are pink to crimson.

- Found in bogs
- Phreatophytic plant
- A woody shrub

A short shrub with evergreen leaves, opposite small leaves that are often enrolled. The leaves are whiteish beneath, the flower are pink to crimson, $\frac{1}{2}$ inch in diameter or more. It grows to about 1-2 feet.





REEDS

Phragmites communis

Reeds are tall stout stemmed plants that form dense stands in wetlands.

- Primarily found in marshes, swamps, and wet meadows
- Herbaceous
- Phreatophytic

Stout leafy stems forming dense stands up to twelve feet high and topped by a plume-like inflorescence.



Reed



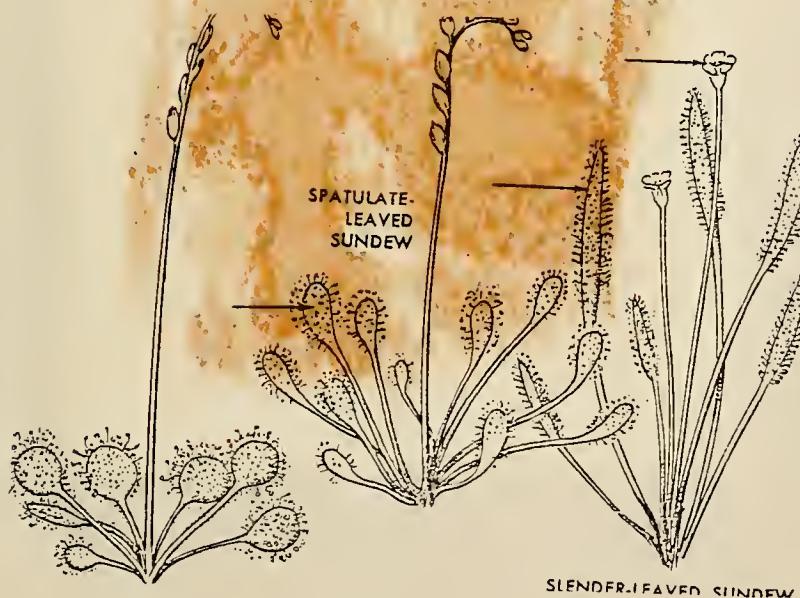
SUNDEW

Drosera rotundifolia L. and *D. intermedia*

A small plant is roundish leaves having reddish, sticky, gland-bearing hairs that ensare and digest insects. Usually found in damp sphagnum moss in open sunny areas.

- Primarily in bogs
- Phreatophytic plant
- Herbaceous plant

The flowers are pink or white in a one-sided cluster opening one at a time. 4 to 9 inches in height, from June to August. It is an insectivorous plant.



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